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February 8, 1974

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Mr. Edgar I. Rowland
State Director
Bureau of Land Management
Federal Building - Room 3008
300 Booth Street
Reno, Nevada 89502

Re: Soil Survey Report - Duckwater Planning Unit, Nevada

Dear Mr. Rowland:

This will transmit to you the soil survey report for portions of the Duckwater Planning Unit, Nevada. The soil survey has been completed under cooperative agreement between our respective agencies. The report provides basic soils data, including soil maps and interpretations in accordance with provisions set-forth in the agreement.

We gratefully acknowledge the assistance and support extended by the staff of your State office and Ely District in the conduct of this soil survey. Soil Conservation Service personnel will plan to explain and consult with your staff to maximize the usefulness of the soil survey and report.

Sincerely yours,

C. A. KRALL
State Conservationist

Enclosures (under separate cover)

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SOIL SURVEY DUCKWATER PLANNING UNIT
Parts of Nye and White Pine Counties, Nevada

August 1973

INTERIM SOIL SURVEY REPORT
Portions of North-Central and Northeast Nye County, and
Northwest and Southwest White Pine County, Nevada

Prepared by

U. S. Department of Agriculture, Soil Conservation Service

in cooperation with

University of Nevada Agricultural Experiment Station and
U. S. Department of Interior, Bureau of Land Management

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SOIL SURVEY OF THE DUCKWATER PLANNING UNIT
Parts of NYE and WHITE PINE Counties, Nevada

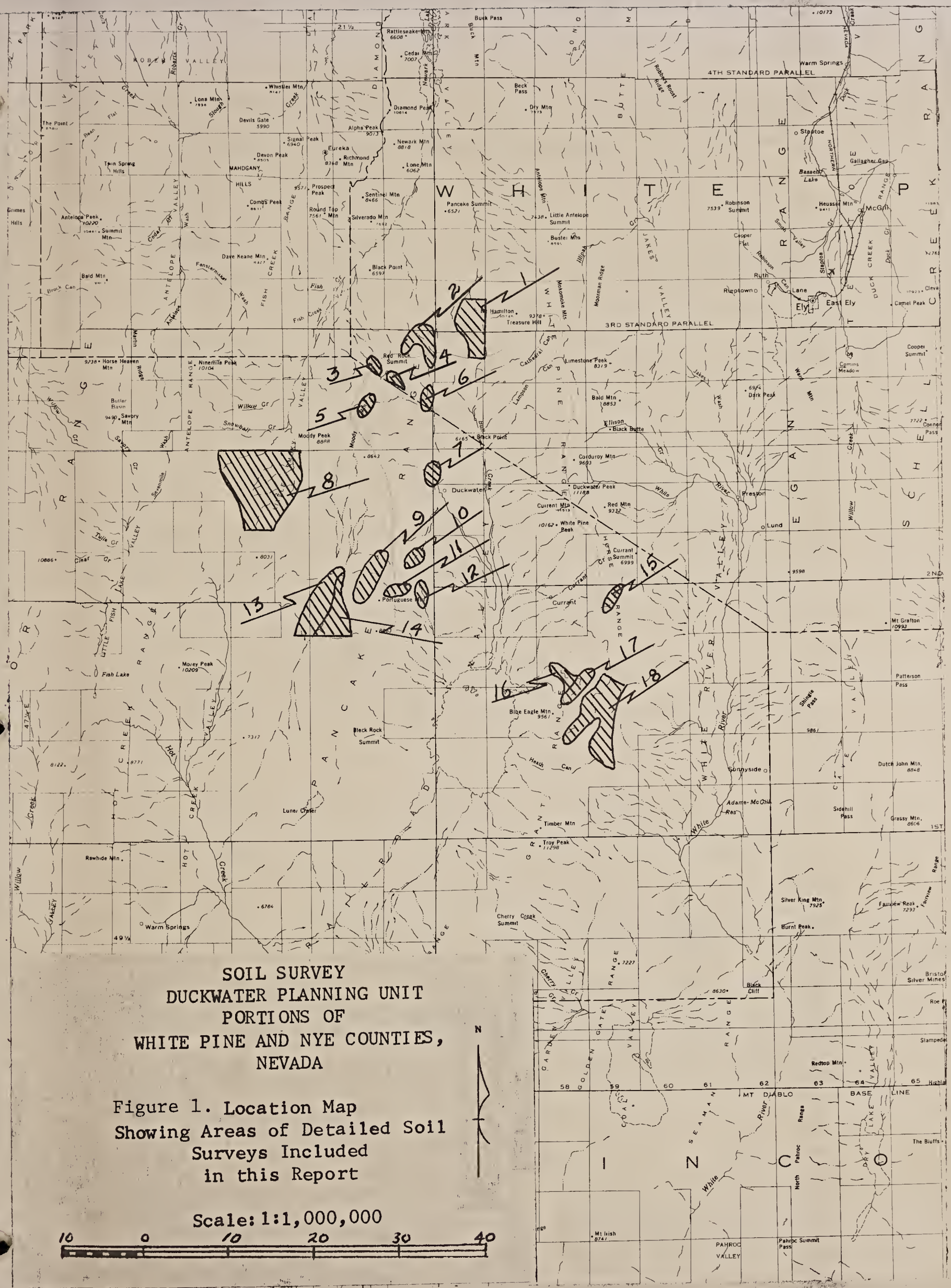
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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE IN COOPERATION WITH THE UNIVERSITY OF NEVADA AGRICULTURAL EXPERIMENT STATION, AND THE UNITED STATES DEPARTMENT OF INTERIOR, BUREAU OF LAND MANAGEMENT

INTRODUCTION

This soil survey consists of about 112,882 acres in the northeastern part of Nye County and the southwestern part of White Pine County, Nevada (fig. 1). The mapped areas are small, irregular-shaped and scattered. For convenience in locating, the areas have been numbered 1 through 18. Area 1 is west of Mt. Hamilton near Monte Cristo. Area 2 is about five miles west of Area 1 in the Pancake Range. Areas 3, 4, and 5 are about twelve miles northwest of Duckwater. Area 6 is nine miles north of Duckwater. Area 7 is immediately north of Duckwater along Duckwater Creek. Area 8 is twenty miles due west of Duckwater in Little Smoky Valley. Area 9 is on the western side of Portuguese Mountain in Sand Spring Valley. Areas 10, 11, and 12 are about fifteen miles west of Currant on the eastern slopes of the Pancake Range. Areas 13 and 14 are west of Portuguese Mountain near the center of Sand Spring Valley. Area 15 is seven miles east of Currant near Manzone Well. Areas 16, 17, and 18 are about twelve miles southeast of Currant.


SOIL SURVEY
DUCKWATER PLANNING UNIT
PORTIONS OF
WHITE PINE AND NYE COUNTIES,
NEVADA
Figure 1. Location Map
Showing Areas of Detailed Soil
Surveys Included
in this Report
Scale: 1:1,000,000
10 0 10 20 30 40
N
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
4TH STANDARD PARALLEL
3RD STANDARD PARALLEL
2ND
1ST
MT DIABLO BASE LINE
Warm Springs
Ely
East Ely
Eureka
Duckwater
Preston
Lund
Currant
Patterson Pass
Dutch John Mtn.
Grassy Mtn.
Mt Grafton
Pahroc Summit Pass
Mt Irish
The Bluffs
Bristol Silver Mines
Stampede
Connor Pass
Cooper Summit
Gallagher Gap
Steptoe
Ruth
Lane
Cleve
Camel Peak
McGill
Ruth
Robinson Summit
Little Antelope Summit
Panceke Summit
Treasure Hill
Red Rock Summit
Limestone Peak
Ninemile Peak
Horse Heaven Mtn
Savory Mtn
Moody Peak
Duckwater Peak
Corduroy Mtn
Current Mtn
Red Mtn
White Pine Peak
Currant Summit
Portuguese Mtn
Morey Peak
Fish Lake
Blue Eagle Mtn.
Black Rock Summit
Timber Mtn
Troy Peak
Rawhide Mtn.
Silver King Mtn.
Fairview Peak
Burnt Peak
Redtop Mtn.
Black Cliff
Ellison
Black Butte
Baldy Mtn
Dark Peak
Bald Mtn
Robbers Roost Ridge
Buck Pass
Beck Pass
Dry Mtn
Diamond Peak
Alpha Peak
Newark Mtn
Lone Mtn
Whistler Mtn
Devils Gate
Signal Peak
Devon Peak
Richmond Mtn
Twin Spring Hills
Prospect Peak
Sentinel Mtn
Combs Peak
Round Top Mtn
Silverado Mtn
Dave Keane Mtn
Black Point
Baldy Mtn
Antelope Peak
Summit Mtn
Grimes Hills
The Point
Lone Mtn
Rattlesnake Mtn
Cedar Mtn
Robert's Valley
Mahogany Hills
Robinson Summit
Heusser Mtn
Bassett Lake
Northern Nevada Railway
Duck Creek Range
White Pine Range
Egan Range
Schell Creek Range
Antelope Range
Fish Creek Range
Diamond Valley
Butte Valley
Moorman Ridge
Jakes Valley
Cooper Flat
Smith Valley
Steptoe Valley
Duck Creek
Fish Creek
Antelope Valley
Cedar Valley
Martin Ridge
Willow Creek
Snowball Creek
Cathedral Canyon
Lampson Canyon
Jakes Wash
Ward Mtn
Current Summit
Horse Creek
Heath Canyon
Hot Creek Valley
Hot Creek Range
Little Fish Lake Valley
Railroad Valley
Cherry Creek Range
Cherry Creek Valley
Garden Valley
Golden Gate Range
Coal Valley
Seaman Range
Pahroc Range
Pahroc Valley
Dry Lake Valley
White River Valley
White River
Pahroc
North Pahroc
Willow Creek Valley
Lake Valley
Hot Creek
Duck Creek
Fish Creek
Willow Creek
Snowball Creek
Moody Creek
Lampson Creek
Ward Creek
Connor Creek
Heath Canyon
Cherry Creek
Garden Valley
Coal Valley
Seaman
Pahroc
Dry Lake
Willow Creek Valley
Hot Creek Valley
Little Fish Lake Valley
Railroad Valley
Cherry Creek Range
Golden Gate Range
Pahroc Range
Pahroc Valley
White River Valley
Lake Valley
Hot Creek
Duck Creek
Fish Creek
Willow Creek
Snowball Creek
Moody Creek
Lampson Creek
Ward Creek
Connor Creek
Heath Canyon
Cherry Creek
Garden Valley
Coal Valley
Seaman
Pahroc
Dry Lake
Willow Creek Valley
Hot Creek Valley
Little Fish Lake Valley
Railroad Valley
Cherry Creek Range
Golden Gate Range
Pahroc Range
Pahroc Valley
White River Valley
Lake Valley

GENERAL NATURE OF THE AREA

Land Use

The soils in the Duckwater Planning Unit have a vegetative cover consisting of an open rangeland type of grasses and shrubs or they have an open woodland type with an overstory of Pinyon-Juniper and an understory of grasses and shrubs. In many areas the grasses and other understory species are sparse and much of the area is dominated by sagebrush. In some areas the Pinyon-Juniper is spreading onto the lower benches and terraces. A few small areas of the Pinyon-Juniper have been cleared by chaining the native vegetation and have been seeded to crested wheatgrass. Some selective cutting of Juniper trees for posts has been done and gathering of Pinyon nuts during productive years has been a common practice. Some firewood has been harvested from this area.

The lands have been classified for multiple use management and are expected to remain in this status for the foreseeable future (5).[1/] The area is used primarily for livestock grazing. Local private lands have been used as a base for grazing of the public lands and often on a year round basis. In the past large numbers of sheep have been wintered in the area. Both sheep and cattle in large numbers have grazed the area, but the number has been greatly reduced.

1/ Italic numbers in parantheses refer to Literature Cited.

1/ _____

_ insert another in correspondence except to alternate cited.

The area provides a wildlife habitat for many species of animals and birds. Mule deer, antelope, coyote and mountain lions are in the area. Birds of prey such as the Golden eagle and hawks are common. Other species such as desert fox, weasels and rabbits are in the area. Sagegrouse, Hungarian partridge, mourning doves, ravens and jays are common. Wild horses which range over the more remote and mountainous parts of the area are often seen.

Recreational use is provided for those who like to hunt for the various game animals and birds when in season. For the hikers, campers and rock hounds the area is rather remote and unspoiled.

The area is highly valued for watershed purposes and has esthetic value.

Physiography and Geology

The eighteen small areas included in this soil survey are situated within the Great Basin Section of the Basin and Range physiographic province. The general area has a repetitive pattern of mountains and intermountain valleys with internal drainage. Landforms characterizing the region include playas, alluvial fans and basin-fill plains, low foothills, and steep rugged mountains. Elevations in the areas mapped are for the most part in excess of 6,000 feet and range upward to more than 7,000 feet.

Areas 1, 2, 8, 9, 13, and 14 consist mostly of smooth and dissected alluvial fans made up of materials derived from volcanics, and sedimentary limestone, dolomites, and shale. These areas have a vegetative cover of sagebrush-grass grading to pinyon-juniper at higher elevations.

Areas 3, 4, 5, 6, 7, 10, 11, 12, 15, 16, 17, and 18 are mostly upland drainage headwater areas made up of small narrow stream flood plains with adjacent alluvial fans, pediments and foothills. Alluvium and residual materials from limestone, shale, dolomite and extrusive volcanics are the major parent materials for these soils. Vegetation is primarily pinyon-juniper woodland with some sagebrush-grass along streambottoms and adjacent alluvial fans. Valley trenching is a serious erosion problem in many of the drainage channels within these areas.

Typography and Geology

The alphabet shall never become fashionable at this book until every one studies
this entire work as one whole item in which each part is related to the rest
and helps explain it. ALL books should be designed with this in mind, but
especially this one, because of its many illustrations, maps, charts, and
mathematical formulae. Typography is a graphic art which involves not only
the proper selection of beautiful type faces, but their arrangement on the
page to best present the author's ideas. Legibility, rhythm, balance and
harmony are the principles which guide typographers in their work. Proper
use of white space is as important as the printed word.

Climate [2/]

The Duckwater Planning Unit has a semi-arid, continental climate. Precipitation is low, sunshine is abundant and evapotranspiration is high. Hot days and cool nights characterize the summer; winters are fairly mild. Snowpack is shallow and generally short-lived. There are two primary sources of influence for moisture: (1) the Pacific Ocean, and (2) the Gulf of Mexico. The general storm circulation is from the west most of the year (fall, winter and spring) bringing moisture which is approximately 37 percent of the total from the Pacific Ocean. The summer storms tend to be from the south, originating in the Gulf of Mexico. Approximately 25 percent of the total moisture is attributed to this source. The remaining 38 percent rises from evaporation of moisture from the Great Basin. The types of triggering mechanisms include convection, orographic lifting (lifting due to mountains), and two basic forms of cyclones: (1) transitory frontal systems originating in the Pacific Ocean and Gulf areas, and (2) continental cyclones developing over the Great Basin (1).

Moisture from the south and from the Great Basin area create infrequent but heavy thunderstorms during the summer and early fall. About thirteen storms per year occur at Diablo in the south end of Railroad Valley and about twenty per year near Currant Summit on Highway 6. Hail falls once or twice a year during these thunderstorms. Hail size is commonly small and damage minimal.

2/ This section was prepared by Dwain Nelson, USDI, Bureau of Land Management, Ely, Nevada.

Some section was truncated by Data Modem (USR), Version 5.52bis
Maximum.

Long term weather records are not available for the area. However, some data dating back to 1963 has been acquired through the Bureau of Land Management, Duckwater Hydro Study. Data is also available from the Currant and Diablo highway maintenance stations 6,240 feet and 5,100 feet, respectively.

Precipitation averages approximately 6 to 10 inches on the valley floor below 6,000 feet. Records from the hydro study show an average of 8.6 inches at 5,800 feet to approximately 13 inches at 6,700 feet. The Currant Highway Station records an average of about 10 inches. Judging from this precipitation from 6,000 to 7,500 feet is estimated between 8 to 12 inches, and above 8,000 feet between 16 and 20 inches.

Precipitation is highly variable. Extremes range from none for a few months to a thunderstorm-type rainfall which leads to flood conditions. As much as 1.69 inches has fallen in a 24-hour period at the Currant Station. Snowfall averages from about 5 inches a year on the valley floor to 20 inches on the adjacent mountain peaks. Snowpack on the valley floor usually melts in a few days. However, on occasion deep snows have occurred which have remained for fairly long periods.

Land term mortgage records are not available for the area.

However, some data gathered back to 1951 has been assembled which may be of some interest. Information is available on 4,240 mortgages on farm properties, including 1,245 first mortgages and 2,995 second mortgages. Data is also available on 1,310 land contract sales. Almost all coverage runs from about 2 inches a year on the Central Plateau. Snowfall averages from about 5 inches on the adjacent mountain range. Precipitation is highly variable. Extremes range from more than 8 to 14 inches, and about 8,000 feet between 12 and 10 inches. Precipitation averages approximately 9 to 14 inches on the valley floor, usually melts in a few days. However, on occasion deep snows have occurred which have remained for fairly long periods.

Evaporation rate and evapotranspiration is very high. The Nevada Water Resources Report estimates the average pan evaporation rate to be 75 to 80 inches annually. The higher rates occur in the southern end of Railroad Valley south of the unit. Humidity is relatively low, ranging from about 30 percent in the summer to 60 percent in the winter. Daytime humidity alone is considerably lower, being 15 percent in the summer and 25 percent in the winter (4), (2).

Wind is generally light in the unit. The usual period in which moderate to high winds, usually not over 20 miles per hour, occur is in late winter and spring. These winds normally associated with passage of frontal systems, prevail from a southerly direction but may shift from south to north as the front passes. Some gusty local winds can occur from any direction and are associated with convectional storms during the summer and early fall periods.

Mean maximum and minimum temperature, precipitation and frost-free growing season are shown in table 1, (4). The information provided is representative of the indicated elevations.

The most limiting effects of the climate in the Duckwater Planning Unit are low precipitation and high evapotranspiration rate.

Table 1.--Climatological Data

	Fish Creek Ranch	Duckwater	Currant Hwy. Station	Snowball	Bull Creek Ranch
Elevation	6,050 feet	5,400 feet	6,100 feet	7,160 feet	5,900 feet
Record Years	1944 to 1966	1966 to present	1962 to present	1965 to present	1963 to 1965
Precipitation					
Years of record	22	5	8	5	3
Mean annual	5.88	7.49	8.30	10.34	8.69
Mean April to September	3.22	4.57	4.51	6.93	5.56
April to September (percent of total)	55	61	54	67	64
Mean maximum	.62 (May)	1.59 (June)	1.51 (April)	1.66 (June)	1.50 (April)
Mean minimum	.30 (February)	.03 (November)	.42 (January)	.20 (October)	.31 (February)
Temperature					
Years of record	22	5	8	5	3
Mean annual degrees F.	42.2	49.4	44.0	43.8	45.7
Mean coldest degrees F.	20.1 (January)	29.3 (December)	25.6 (January)	25.9 (December)	25.9 (January)
Mean warmest desrees F.	64.1 (July)	72.3 (July)	67.9 (July)	64.7 (July)	66.8 (July)
Extreme high degrees F.	99.0 (July)	98.0 (July)	92.0 (June)	87.0 (July)	-
Extreme low degrees F.	-34.0 (January)	-	-22.0 (December)	-12.0 (December)	-
Average last killing frost in spring	June 10	May 15	May 22	June 30	-
Average first killing frost in fall	August 29	September 21	August 21	August 22	-
Average growing season (days)	80	125	91	53	-

Table 3.—Climatological data

	Flat Creek Ranch	Deadwater	Current Bay-Timbleton	Greenhill	Bull Creek Ranch
Elevation	6,050 feet	5,900 feet	6,100 feet	7,160 feet	5,900 feet
Record Years	1944 to 1966	1956 to present	1962 to present	1965 to present	1962 to 1965
Precipitation					
Years of record	22	5	6	5	3
Mean annual	5.68	7.49	8.39	10.34	8.49
Mean April to September	3.22	4.37	4.31	6.03	5.14
April to September (percent of total)	55	61	54	67	64
Mean maximum	.62 (May)	1.39 (June)	1.31 (April)	1.66 (June)	1.30 (April)
Mean minimum	.30 (February)	.85 (November)	.47 (January)	.20 (October)	.11 (February)
Temperature					
Years of record	22	5	8	5	3
Mean annual degrees F.	45.2	49.4	44.9	43.8	45.7
Mean coldest degrees F.	20.1 (January)	19.3 (December)	25.6 (January)	25.9 (December)	23.3 (January)
Mean warmest degrees F.	64.1 (July)	72.3 (July)	67.9 (July)	64.7 (July)	66.8 (July)
Extreme high degrees F.	99.2 (July)	95.0 (July)	93.0 (June)	87.0 (July)	-
Extreme low degrees F.	-34.0 (January)	-	-22.0 (December)	-17.0 (December)	-
Average last killing frost in spring	June 10	May 13	May 22	June 30	-
Average first killing frost in fall	August 29	September 21	August 21	August 21	-
Average growing season (days)	80	121	91	53	-

HOW THIS SURVEY WAS MADE

Soil scientists made this survey to learn what kinds of soil are in the Duckwater Planning Unit, where they are located, and how they can be used. The soil scientists went into the area knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size of streams, the kinds of native plants or crops, the kinds of rock and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparison among the profiles they studied, and they compared these profiles with those in areas nearby and in places more distant. They classified and named the soils according to nation-wide, uniform procedures. The soil series, the soil family, and the soil phase are the categories of soil classification used in this survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Abgese and Yody, for example, are the names of two soil series. All the soil in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

A soil family is made up of similar soil series that have the same particle-size class, mineralogy, reaction, soil temperature and soil depth, but the family has a wider variation in the thickness of major horizons and other important characteristics than each of the series it is made up of. Each of the soil mapped as a family in the Duckwater Planning Unit is so narrowly defined it could have been placed into a soil series but was not because the soil did not fit any existing series, and the acres mapped is too small and of unknown extent for a new series.

Soils of one series, or family can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series or family is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Abgese gravelly loamy sand, 2 to 4 percent slopes is one of several phases within the Abgese series, and Haploxerollic Durorthids, loamy-skeletal, mixed, frigid, 4 to 15 percent slopes is one of several phases of the Haploxerollic Durorthids, loamy-skeletal, mixed, frigid family.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodland, field borders, trees, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different families or series, or of different phases within one series. Two such kinds of mapping units are shown on the soil map: soil complexes and soil associations.

A soil complex consists of areas of two or more soils, so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. Generally, the name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Hopeka-Rock outcrop complex is an example.

A soil association is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils may differ greatly one from another. The name of an association consists of the names of the dominant soils, joined by a hyphen. Loza-Drewing association is an example.

In most areas surveyed there are places where the soil material is so rocky, so shallow, so severely eroded, or so variable that it has not been classified by soil series. These places are shown on the soil map and are described in the survey, but they are called miscellaneous land types and are given descriptive names. Rock outcrop is an example.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kind of soil in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kind of soil.

Soil scientists observe how soils behave when used as a growing place for native and cultivated plants, and as material for structures, foundations for structures, or covering for structures. They relate this behavior to properties of the soils. For example, they observe that filter fields for on-site disposal of sewage fail on a given kind of soil, and they relate this to the slow permeability of the soil or its high water table. They see that streets, road pavements, and foundations for houses are cracked on a named kind of soil and they relate this failure to the high shrink-swell potential of the soil material. Thus, they use observation and knowledge of soil properties, together with available research data, to predict limitations or suitability of soils for present and potential uses.

After data have been collected and tested for the key, or benchmark soils in a survey area, the soil scientists set up trial groups of soils. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. They then adjust the groups according to the results of their studies and consultation. Thus, groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under current methods of use and management.

DESCRIPTIONS OF THE SOILS

This section describes the soil series or soil family and mapping units in the Duckwater Planning Unit. Each soil series or soil family is described in detail, and then briefly, each mapping unit in that series or family. Unless it is specifically mentioned otherwise, it is to be assumed that what is stated about the soil series or soil family holds true for the mapping units in that series or family. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series or soil family to which it belongs.

An important part of the description of each soil series or soil family is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series or family contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second is much more detailed and is for those who need to make thorough and precise studies of soils. Color terms are for dry soil unless otherwise stated. The profile described in the series or family is representative for mapping units in that series or family. If the profile of a given mapping unit is different from the one described for the series or family, these differences are stated in describing the mapping unit, or they are differences that are apparent in the name of the mapping unit.

As mentioned in the section, "How This Survey Was Made," not all mapping units are members of a soil series or soil family. Rock outcrop, for examples, does not belong to a soil series or soil family, but nevertheless, is listed in alphabetic order along with the soil series and soil families.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map.

The acreage and proportionate extent of each mapping unit are shown in table 2. Many of the terms used in describing soils can be found in the Glossary at the end of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (3).

Table 2.--Approximate acreage and proportionate extent of the soils

Map Symbol	Soils	Area	Extent
		Acres	Percent
22	Abgese sandy loam, 0 to 4 percent slopes	1,531	1.4
23	Abgese sandy clay loam, 2 to 4 percent slopes	321	.3
24	Abgese-Portmount association	19,750	17.5
25	Abgese-Durixerollic Calciorthids association	323	.3
26	Abgese-Haploxerollic Durargids association	2,730	2.4
27	Abruptic Xerollic Durargids	67	.1
28	Ansping gravelly coarse sandy loam, 4 to 15 percent slopes	1,532	1.4
29	Ansping-Aridic Calcixerolls association	660	.6
30	Aridic Calcixerolls-Fanu association	208	.2
31	Aridic Durixerolls	764	.7
32	Belmill gravelly sandy loam, 0 to 4 percent slopes	641	.6
33	Belmill gravelly loam, 4 to 8 percent slopes	759	.7
34	Bruffy silt loam, 2 to 4 percent slopes	190	.2
35	Buster gravelly sandy loam, 2 to 8 percent slopes	323	.3
36	Buster loam, 0 to 4 percent slopes	302	.3
37	Buster-Handy association	505	.4
38	Buster-Pedoli association	1,653	1.5
39	Buster-Xerollic Haplargids association	544	.4
40	Bylo silt loam, 0 to 2 percent slopes	236	.2
41	Bylo silt loam, 0 to 4 percent slopes	1,877	1.7
42	Bylo silty clay loam, 0 to 2 percent slopes	339	.3

Table 3.—Phrenxtenta nereeng mna proportionsete extent
of the soils

Map symbol	Soils	Area	Percent
		Total	
1.	Alfalfa loam, 0 to 4 percent slopes	1,231	1.1
2.	Alfalfa loam, 4 to 8 percent slopes	1,121	1.0
3.	Alfalfa silty clay loam, 0 to 4 percent slopes	338	.3
4.	Alfalfa silty clay loam, 4 to 8 percent slopes	1,618	1.4
5.	Alfalfa silty clay loam, 8 to 12 percent slopes	345	.3
6.	Alfalfa-Dewitt complex, 4 to 12 percent slopes	1,235	1.1
7.	Alfalfa fine sandy loam, 0 to 4 percent slopes	1,124	1.0
8.	Alfalfa-Dewitt complex, 0 to 4 percent slopes	1,235	1.1
9.	Alfalfa-Dewitt complex, 4 to 12 percent slopes	1,235	1.1
10.	Alfalfa-Dewitt complex, 12 to 20 percent slopes	1,235	1.1
11.	Alfalfa-Dewitt complex, 20 to 30 percent slopes	1,235	1.1
12.	Alfalfa-Dewitt complex, 30 to 45 percent slopes	1,235	1.1
13.	Alfalfa-Dewitt complex, 45 to 60 percent slopes	1,235	1.1
14.	Alfalfa-Dewitt complex, 60 to 75 percent slopes	1,235	1.1
15.	Alfalfa-Dewitt complex, 75 to 90 percent slopes	1,235	1.1
16.	Alfalfa-Dewitt complex, 90 to 100 percent slopes	1,235	1.1
17.	Alfalfa-Dewitt complex, 100 to 120 percent slopes	1,235	1.1
18.	Alfalfa-Dewitt complex, 120 to 140 percent slopes	1,235	1.1
19.	Alfalfa-Dewitt complex, 140 to 160 percent slopes	1,235	1.1
20.	Alfalfa-Dewitt complex, 160 to 180 percent slopes	1,235	1.1
21.	Alfalfa-Dewitt complex, 180 to 200 percent slopes	1,235	1.1
22.	Alfalfa-Dewitt complex, 200 to 220 percent slopes	1,235	1.1
23.	Alfalfa-Dewitt complex, 220 to 240 percent slopes	1,235	1.1
24.	Alfalfa-Dewitt complex, 240 to 260 percent slopes	1,235	1.1
25.	Alfalfa-Dewitt complex, 260 to 280 percent slopes	1,235	1.1
26.	Alfalfa-Dewitt complex, 280 to 300 percent slopes	1,235	1.1
27.	Alfalfa-Dewitt complex, 300 to 320 percent slopes	1,235	1.1
28.	Alfalfa-Dewitt complex, 320 to 340 percent slopes	1,235	1.1
29.	Alfalfa-Dewitt complex, 340 to 360 percent slopes	1,235	1.1
30.	Alfalfa-Dewitt complex, 360 to 380 percent slopes	1,235	1.1
31.	Alfalfa-Dewitt complex, 380 to 400 percent slopes	1,235	1.1
32.	Alfalfa-Dewitt complex, 400 to 420 percent slopes	1,235	1.1
33.	Alfalfa-Dewitt complex, 420 to 440 percent slopes	1,235	1.1
34.	Alfalfa-Dewitt complex, 440 to 460 percent slopes	1,235	1.1
35.	Alfalfa-Dewitt complex, 460 to 480 percent slopes	1,235	1.1
36.	Alfalfa-Dewitt complex, 480 to 500 percent slopes	1,235	1.1
37.	Alfalfa-Dewitt complex, 500 to 520 percent slopes	1,235	1.1
38.	Alfalfa-Dewitt complex, 520 to 540 percent slopes	1,235	1.1
39.	Alfalfa-Dewitt complex, 540 to 560 percent slopes	1,235	1.1
40.	Alfalfa-Dewitt complex, 560 to 580 percent slopes	1,235	1.1
41.	Alfalfa-Dewitt complex, 580 to 600 percent slopes	1,235	1.1
42.	Alfalfa-Dewitt complex, 600 to 620 percent slopes	1,235	1.1
43.	Alfalfa-Dewitt complex, 620 to 640 percent slopes	1,235	1.1
44.	Alfalfa-Dewitt complex, 640 to 660 percent slopes	1,235	1.1
45.	Alfalfa-Dewitt complex, 660 to 680 percent slopes	1,235	1.1
46.	Alfalfa-Dewitt complex, 680 to 700 percent slopes	1,235	1.1
47.	Alfalfa-Dewitt complex, 700 to 720 percent slopes	1,235	1.1
48.	Alfalfa-Dewitt complex, 720 to 740 percent slopes	1,235	1.1
49.	Alfalfa-Dewitt complex, 740 to 760 percent slopes	1,235	1.1
50.	Alfalfa-Dewitt complex, 760 to 780 percent slopes	1,235	1.1
51.	Alfalfa-Dewitt complex, 780 to 800 percent slopes	1,235	1.1
52.	Alfalfa-Dewitt complex, 800 to 820 percent slopes	1,235	1.1
53.	Alfalfa-Dewitt complex, 820 to 840 percent slopes	1,235	1.1
54.	Alfalfa-Dewitt complex, 840 to 860 percent slopes	1,235	1.1
55.	Alfalfa-Dewitt complex, 860 to 880 percent slopes	1,235	1.1
56.	Alfalfa-Dewitt complex, 880 to 900 percent slopes	1,235	1.1
57.	Alfalfa-Dewitt complex, 900 to 920 percent slopes	1,235	1.1
58.	Alfalfa-Dewitt complex, 920 to 940 percent slopes	1,235	1.1
59.	Alfalfa-Dewitt complex, 940 to 960 percent slopes	1,235	1.1
60.	Alfalfa-Dewitt complex, 960 to 980 percent slopes	1,235	1.1
61.	Alfalfa-Dewitt complex, 980 to 1000 percent slopes	1,235	1.1

Table 2.--Approximate acreage and proportionate extent of the soils

Map Symbol	Soils	Area Acres	Extent Percent
43	Bylo-Abgese association	794	.7
44	Bylo-Ramshorn association	140	.1
45	Colona silty clay loam, 0 to 2 percent slopes	979	.9
46	Durixerollic Calciorthids-Xerollic Calciorthids association	3,161	2.8
47	Durorthidic Xeric Torriorthents-Ramshorn association	184	.2
48	Fanu loam, 2 to 8 percent slopes	582	.5
49	Fanu-Calciorthidic Haploxerolls association	700	.6
50	Haploxerollic Durargids	170	.1
51	Haploxerollic Durargids association	1,682	1.5
52	Haploxerollic Durargids-Abgese association	334	.3
53	Haploxerollic Durorthids	1,235	1.1
54	Haploxerollic Durorthids-Abruptic Xerollic Durargids association	226	.2
55	Hopeka-Rock outcrop complex	189	.2
56	Ilton gravelly sandy loam, 4 to 15 percent slopes	2,196	1.9
57	Ilton gravelly sandy loam, 15 to 50 percent slopes	264	.2
58	Lien very gravelly sandy loam, 0 to 4 percent slopes	689	.6
59	Loza-Drewing association	7,729	6.8
60	Nark gravelly loam, 0 to 4 percent slopes	1,094	1.0
61	Nark gravelly loam, 4 to 8 percent slopes	736	.6
62	Nuc very gravelly loam, 4 to 8 percent slopes	379	.3

Table 3.--Phenanthrene content and proportion extract of the soils

Sample No.	Soil	Extract	Phenanthrene content
		Grams	Grams
1.	Gray-brown podzolic association	98.7	0.0
2.	Gray-brown podzolic-yellow podzolic association	45.2	.0
3.	Yellow podzolic-planosol complex	1,235.4	1.1
4.	Yellow podzolic-planosol-yellow podzolic association	455	.0
5.	Yellow podzolic-planosol complex	1,288.4	1.2
6.	Yellow podzolic-planosol association	715	.1
7.	Red-yellow podzolic-planosol association	1,007	.0
8.	Loam, 1 to 3 percent slopes	292	.0
9.	Red-yellow podzolic complex, eroded-planosol association	484	.0
10.	Red-yellow podzolic-gray podzolic-planosol association	1,141	1.4
11.	Gray podzolic soils, 0 to 1 percent slopes	197	.0
12.	Yellow podzolic-planosol association	184	.0
13.	Yellow podzolic-gray podzolic complex	1,180	1.9
14.	Gray podzolic soils, 4 to 12 percent slopes	1,350	1.3
15.	Clay, 15 to 25 percent slopes	384	.0
16.	Clay, 4 to 8 percent slopes	685	.0
17.	Loam, 8 to 12 percent slopes	1,153	0.8
18.	Loam, 0 to 4 percent slopes	1,004	1.0
19.	Loam, 4 to 8 percent slopes	1,137	1.0
20.	Clay, 8 to 15 percent slopes	916	.0

Table 2.--Approximate acreage and proportionate extent of the soils

Map Symbol	Soils	Area Acres	Extent Percent
63	Nuc association	5,110	4.5
64	Nuc-Xeric Torriorthents association	734	.6
65	Nuc-Xerollic Haplargids association	356	.3
66	Papoose gravelly sandy loam, 2 to 4 percent slopes	690	.6
67	Penoyer silty clay loam, 0 to 2 percent slopes	540	.5
68	Poorma very fine sandy loam, 0 to 4 percent slopes	273	.2
69	Portmount loamy sand, 0 to 2 percent slopes	170	.1
70	Typic Camborthids-Rock outcrop association	36	.05
71	Typic Haplargids-Typic Camborthids association	1,640	1.4
72	Typic Torriorthents	38	.05
73	Typic Torriorthents-Bylo association	2,137	1.9
74	Unsel gravelly sandy loam, 2 to 4 percent slopes	968	.9
75	Xerertic Camborthids	559	.5
76	Xerertic Haplargids	638	.6
77	Xerertic Haplargids-Drewing association	556	.5
78	Xeric Torriorthents-Xerollic Durargids complex	174	.1
79	Xerollic Durargids	267	.2
80	Xerollic Durargids-Ramshorn association	1,216	1.1
81	Xerollic Durorthids	968	.9
82	Xerollic Haplargids	1,246	1.1
83	Xerollic Durorthids-Durixerollic Calciorthids association	641	.6

Table 2.--Approximate acreage and proportionate extent of the soils

Map Symbol	Soils	Area	Extent
		Acres	Percent
84	Xerollic Haplargids	207	.2
85	Xerollic Haplargids	820	.7
86	Xerollic Paleargids	484	.4
87	Yody-Abgese association	29,660	26.3
88	Yody-Bravane association	4,036	3.6
	Total	112,882	100.0

Abgese Series

The Abgese series are nearly level to gently rolling soils that have formed on old alluvial fans from andesite, dacite, basalt, and tuffs. The vegetation is big sagebrush, rabbitbrush, Indian ricegrass, and squirreltail. They are at elevations of 6,000 to 6,800 feet where the mean annual precipitation is about 8 inches; mean annual air temperature is 45° to 48° F.; and the frost-free season is about 110 days. Abgese soils are in Areas 8, 9, 13, and 14.

Typical Abgese soil profiles have a sequence of three main parts: (1) a surface layer about 1 inch thick of brown gravelly loamy sand underlain by about 5 inches of light gray gravelly sandy loam: (2) a pale brown sandy clay loam over a gravelly sandy clay loam about 15 inches thick; and (3) a stratified light yellowish brown to light gray gravelly sandy loam to gravelly loamy sand that extends to 60 inches.

Abgese soils are well drained. They have moderate permeability. Available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate.

These soils are used for livestock grazing, recreation, and wildlife habitat.

Alpheus Hunting

The Alpheus oysters are nearly level to nearly rolling soils of the
level forested or old alluvial land from Andersten, Proctor, Bemalt, and
New Orleans series to Crowley loams and fine sandy loams on 0 to 3 slopes.
Many areas are well drained. They have moderate permeability.
Runoff is slow, and the erosion hazard is moderate. Large areas are used
for truck and cotton; a few are in pasture.

Alpheus soils are used for livestock grazing, recreation, and
wildlife habitat.

A representative profile of Abgese gravelly loamy sand, 2 to 4 percent slopes, rangeland, is in Area 14 at a site about 2.75 miles northeast of the main trail across Sand Spring Wash, 0.8 mile west, 0.25 mile south of the northeast corner of section 25, T. 10 N., R. 53 E.

(Colors are for dry soil unless otherwise noted).

A11--0 to 1 inch, brown (10YR 5/3) gravelly loamy sand, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky, nonplastic; few coarse roots; about 25 percent by volume gravel; moderately alkaline; abrupt smooth boundary.

A12--1 to 5 inches, light gray (10YR 7/2) sandy loam, dark brown (10YR 3/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky, nonplastic; common fine, medium and coarse roots; common fine and very fine vesicular pores; about 10 percent by volume fine gravel; moderately alkaline; abrupt smooth boundary.

B21t--5 to 14 inches, pale brown (10YR 6/3) sandy clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, friable, sticky, plastic; clay films on some peds and pebbles; common fine, medium and coarse roots; common fine interstitial and tubular pores; about 10 percent by volume fine and very fine gravel; moderately alkaline; clear wavy boundary.

B22t--14 to 20 inches, light yellowish brown (10YR 6/4) gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky, slightly plastic; patchy clay films; few fine, medium and coarse roots; common fine interstitial and tubular pores; about 15 percent by volume fine and medium gravel; moderately alkaline; clear wavy boundary.

B3tca--20 to 35 inches, light yellowish brown (10YR 6/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; patchy clay films and bridging of sand grains; few fine and medium roots; common fine interstitial and tubular pores; about 40 percent by volume fine and very fine gravel; violently effervescent; streaks of lime; lime-coated pebbles; moderately alkaline; clear irregular boundary.

Cca--35 to 60 inches, light gray (10YR 7/2) gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; very few fine and very fine roots; about 35 percent by volume fine and very fine gravel; violently effervescent; strongly alkaline.

The solum thickness to the Cca horizon is 25 to 40 inches. The surface texture ranges from sandy clay loam to gravelly loamy sand. Loamy sand is commonly mounded under sagebrush. The A horizon has hue of 10YR, value of 5 thru 7, and chroma of 2 or 3. The argillic horizon is sandy clay loam to gravelly sandy loam in texture with 18 to 25 percent clay. The hue is 10YR, value is 5 or 6, and chroma is 3 or 4. The Cca horizon has texture of gravelly loamy sand to gravelly sandy loam. It has hue of 10YR, value is 6 or 7, and chroma is 2 thru 4.

Abgese sandy loam, 0 to 4 percent slopes (22).--This soil occurs as long, narrow bands on flood plains that have little erosion or deposition of fresh soil material. They are entrenched 20 to 50 feet below the level of the old alluvial fans they drain. This soil is similar to that described for the series, except the surface is sandy loam and the solum is thinner. Included are about 15 percent Typic Camborthids on more recent deposits within the flood plain, and Xerollic Haplargids intermingled with Abgese soils.

The vegetation is big sagebrush, a few grasses, and rabbitbrush.

This soil has medium runoff, and the erosion hazard is moderate.

Abgese sandy clay loam, 2 to 4 percent slopes (23).--This soil occurs in one irregular-shaped area. This gently sloping soil is at the mouths of large drainageways that become braided and spread runoff from high rainfall or snowmelt over large areas. This soil is similar to that described for the series, except the surface is sandy clay loam, the subsoil is about 16 inches thick, and the C horizon is more stratified. Included are about 15 percent Typic Camborthids along main drainageways.

The vegetation is scattered big sagebrush, Indian ricegrass, squirreltail, and weeds.

The runoff is medium, and the erosion hazard is moderate.

Abgese-Portmount association (24).--This association occurs as large, irregular-shaped areas. It consists of about 50 percent Abgese gravelly loamy sand, 2 to 4 percent slopes; and 40 percent Portmount very gravelly loamy sand, 2 to 4 percent slopes. These soils are dissected by draws which originate in nearby mountains. As the landscape flattens, many of the draws become braided with no well defined channels. Included are about 10 percent Xerollic Haplargids along drainageways, and cobbly Durixerollic Haplargids on sideslopes of the more deeply entrenched drainageways.

The Abgese soils are on broad, smooth fans. The Portmount soils are on more narrow fans and near present or relict draws. These soils are similar to those described for each respective series.

The vegetation for the soils in this unit consist of big sagebrush, rabbitbrush, Indian ricegrass, and squirreltail.

Runoff is medium for the soils in this unit. The erosion hazard for Abgese and Portmount soils is moderate.

Abgese-Durixerollic Calciorthids association (25).--This association has been mapped in one irregular-shaped area in the northwestern part of Area 13. These gently sloping soils are on weakly dissected, old alluvium mainly from dacite, andesite, and tuffs. It consists of about 55 percent Abgese gravelly loamy sand, 2 to 4 percent slopes; and 30 percent Durixerollic Calciorthids, loamy-skeletal, mixed, mesic, gravelly sandy loam, 2 to 4 percent slopes. Included are about 15 percent Durixerollic Haplargids.

The Durixerollic Calciorthids are on the crests of long, smoothly rounded fans and are lighter colored than the Abgese soils. The soils in this unit are similar to those described as representative for the series and soil family, except the Abgese soils have more segregated lime in the C horizon and may be weakly cemented below 40 inches depth.

The Abgese soils support big sagebrush, Indian ricegrass, and squirreltail. The vegetation on the Durixerollic Calciorthids is black sagebrush, rabbitbrush, and halogeton. Much of the surface is barren.

The runoff for these soils is medium. The Abgese soil has a moderate erosion haazard. The erosion hazard for the Durixerollic Calciorthids is moderate.

Aphasia-Dextrocardia Coincidence Association (IX).—Until
we have collected data from a much larger number of cases
than we now possess we cannot form any opinion as to the
significance of the association of dextrocardia with
aphasia. The association of the dextrocardiac condition
with left-handedness, and also with various defects of
vision, is also worthy of note. It is common to find 2 to 4 per cent
of the whole population left-handed; and 30 per cent dextrocardiac, 5 to 6 per cent
color-blind, mixed, weak, distantly among them, 5 to 6 per cent
others. Included are about 11 per cent dextrocardiac temperaments.
The dextrocardiac condition was on the order of 1 to
one that the aphasic cases had been born left-handed
and color blind. Except the aphasic cases had been

Abgese-Haploxerollic Durargids association (26).--This association occurs as irregular-shaped areas on gently sloping to strongly sloping, old alluvial fans. They developed in mixed alluvium from flow rock, tuffs, and various sedimentary rocks. It consists of about 35 percent Abgese gravelly loamy sand, 2 to 8 percent slopes; 30 percent Haploxerollic Durargids, clayey, montmorillonitic, mesic, gravelly loam, 4 to 15 percent slopes; and 20 percent Haploxerollic Durargids, loamy-skeletal, mixed, mesic, gravelly loam, 4 to 15 percent slopes. Included are about 15 percent Xerollic Haplargids in narrow stream bottoms, and Paleargids and cobbly Typic Camborthids on steep sideslopes which border drainageways.

The Abgese soils are on smooth sideslopes at the head of major drainageways. The Haploxerollic Durargids are on ridgetops and rolling sideslopes. These soils are similar to those described as representative for the series and soil families.

The vegetation on Abgese soil is big sagebrush, rabbitbrush, Indian ricegrass, and squirreltail. The vegetation on the Haploxerollic Durargids is black sagebrush, squirreltail, Indian ricegrass, rabbitbrush, and a few juniper trees.

The runoff for the soils in this unit is medium. The erosion hazard is moderate for the Abgese soil; for the Haploxerollic Durargids it is slight.

Aphebo-Haplohemiorthidic Entisol association (35).--Lhis association occurs on fluvially-dpmbed areas on nearly alpvial to strongly sloping, old alluvial fans. Very gravelpy to mixed silty, fluvial rock, tuffs, and pyrfona pyroclastic rocks. It consists of about 35 percent Aphebo fluvially fans and, 5 to 8 percent slope, 30 percent Haplohemiorthidic Entisols, clayey, montmorillonitic, mesic, gravelly loam, 4 to 12 percent slopes; and 30 percent Haplohemiorthidic Entisols, fossil-calcareal, mixed, mesic, gravelly loam, 4 to 12 percent slopes. Included are about 15 percent Lorolfic Camborthids, loamy-skelet

Abruptic Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, shallow

The soils in the area representing this family are strongly sloping and have formed on outcrops of volcanic flow rock that is interbedded with tuffs. The vegetation consists of black sagebrush, galleta grass, and Indian ricegrass. They are at elevations of 6,000 to 6,600 feet where the mean annual precipitation is about 8 inches; mean annual air temperature is 47° to 50° F.; and the frost-free season is 100 to 120 days. These soils are in Areas 14 and 10.

Typical soil family profiles have a sequence of four main parts: (1) a pale brown stony, cobbly and gravelly sandy loam surface layer about 2 inches thick; (2) a light brown to strong brown stony, cobbly and gravelly clay about 8 inches thick; (3) a very pale brown cemented layer of tuff about 14 inches thick; and (4) dacite bedrock that extends to more than 26 inches.

These soils are well drained. They have slow permeability. Available water capacity is low. They have medium runoff, and the erosion hazard is slight.

These soils are used for livestock grazing and wilflife habitat.

A representative profile of Abruptic Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, shallow, stony, cobbly and gravelly sandy loam, 8 to 15 percent slopes, rangeland, is in Nye County, Nevada at a site about 1.74 miles east of the junction of an unimproved road with Sand Spring Wash; 0.95 mile south, 0.9 mile west of the northeast corner of section 36, T. 10 N., R. 53 E.

A1--0 to 2 inches, pale brown (10YR 6/3) stony, cobbly and gravelly sandy loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky, slightly plastic; root crowns; many fine and very fine interstitial and vesicular pores; about 20 percent stones, 20 percent cobbles, 30 percent gravel; loamy sand is mounded 1 to 2 inches thick under sagebrush plants; moderately alkaline; abrupt smooth boundary.

B21t--2 to 7 inches, light brown (7.5YR 6/4) stony, cobbly and gravelly clay, dark brown (7.5YR 4/4) moist; moderate fine blocky and subangular blocky structure; slightly hard, friable, sticky, plastic; common fine to coarse roots; common fine interstitial and tubular pores; about 20 percent stones, 30 percent cobbles; 20 percent gravel; clay films on faces of peds; moderately alkaline; abrupt smooth boundary.

B22t--7 to 10 inches, strong brown (7.5YR 5/6) cobbly and gravelly clay, strong brown (7.5YR 4/6) moist; moderate fine blocky and subangular blocky structure; slightly hard, firm, sticky, plastic; common fine roots; common fine interstitial and tubular pores; about 35 percent cobbles, 30 percent gravel, 10 percent stones; silica-lime coating on lower side of cobbles and stones; clay films on faces of peds; moderately alkaline; abrupt irregular boundary.

C1sicam--10 to 24 inches, very pale brown (10YR 7/4) duripan, brownish yellow (10YR 6/6) moist; massive; very hard and very firm weathered limy tuffs that are laminar capped; a few pockets are hard and firm and contain a few roots; embedded in tuffs are about 50 percent by volume stones and 35 percent cobbles; violently effervescent; moderately alkaline; abrupt irregular boundary.

R--24 to 26 inches, dacite bedrock.

The depth of the solum to the hardpan is 8 to 14 inches. The mean annual soil temperature is 47° to 50° F. The A1 horizon has hue of 7.5YR or 10YR, value of 6 or 7, and chroma of 2 thru 4. Texture is stony, cobbly and gravelly loam or sandy loam. The Bt horizon has hue of 10YR thru 5YR, value of 4 thru 6, and chroma of 3 thru 6. Texture is stony, cobbly and gravelly clay loam or clay that is 38 to 50 percent clay. The hardpan lacks laminar caps in some pedons. The R horizon is dacite, andesite or basalt.

The depth of the words in the paragraph is 8 to 14 inches. The mean vertical unit temperature is 71° to 75° F. The air position has one of 1.7% or less, using of 6 or 7. and control of 5 cpi. 4.

Increase in atom, complex and intensity load or depth load. The st location has one of TOTE data 2%. using of 4 cpi 6, and control of 3 cpin 6. Increase in atom, complex and intensity load or clay load or clay 3 cpin 6. Increase in atom, complex and intensity clay load or clay cpst is 30 to 50 percent clay. The paragraph lacks luminal cave in some before. The a position is lacite, andesite or basalt.

K--34 to 38 inches, short podzol.

moderately alkaline: sprout transient boundary.

atomse and 33 percent complex: autoantly differentiate;

compiled in suite ate spout 29 percent by volume

Pockets are hard and firm and contain a few roots

necessary life suite cpst ate landuse cribed. A low

very (JOE 9\6) noist: massive: very hard and very firm

Clairom--10 to 14 inches, very bare phase (JWE 1\4) quirbed, promised

alkaline: sprout transient boundary.

atomse: clay lime on lacus of bank: moderately

silica-lime content on loamy side of complex and

percent complex, 30 percent krust 10 percent atomse:

common lime lucrecritical and cupular bone: spout 33

hard, firm, actory, bracric: common lime roots:

time block and amendment block ustumtus: alkaline

well clay, atrous8 prom (1.2E 4\4) noist: moderate

RSSC--1 to 11 inches, atrous prom (1:2E 2\6) complex and fre-

Abruptic Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, shallow, stony, cobbly and gravelly sandy loam, 8 to 15 percent slopes (27).--This soil occurs as rounded to oblong areas that are slightly higher in the local landscape than soils developed on old alluvial fans. This strongly sloping soil has developed in outcrops of volcanic flow rock that is interbedded in places with tuffs. It is similar to that described for the soil family. Included are about 15 percent Rock outcrop, Haplargids and loamy-skeletal Durargids.

These soils have medium runoff, and the erosion hazard is slight.

Abruptic Xerollic Durargids, clayey, montmorillonitic, frigid, shallow

The soils in the area representing this family are gently sloping to moderately sloping and have formed on alluvial pediments mainly from tuffs. The vegetation consists of scattered juniper, and small amounts of big sagebrush and a few miscellaneous forbs. They are at elevations of 6,200 to 6,800 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is 90 to 100 days.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown gravelly loam surface layer about 2 inches thick; (2) a brown to pale brown clay loam layer about 7 inches thick; and (3) a white strongly cemented hardpan that extends 15 inches to weathered tuff bedrock.

These soils are well drained. They have very slow permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is moderate.

They are used to provide grazing for livestock and wildlife.

A representative profile of Abruptic Xerollic Durargids, clayey, montmorillonitic, frigid, shallow, gravelly loam, 2 to 8 percent slopes, rangeland, is in White Pine County, Nevada at a site about 750 feet north and 300 feet west of the southeast corner of section 23, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 2 inches, pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, friable, nonsticky, nonplastic; many very fine and fine vesicular pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

B21t--2 to 4 inches, brown (10YR 5/3) clay loam, dark yellowish brown (10YR 3/4) moist; strong very fine and fine granular structure; very soft, very friable, very sticky, very plastic; common very fine and fine roots; many very fine and fine interstitial pores; many thin clay films on faces of peds and as bridges; strongly effervescent; moderately alkaline; abrupt smooth boundary.

B22t--4 to 9 inches, pale brown (10YR 6/3) clay loam, dark brown (7.5YR 4/4) moist; mostly massive, weak very fine granular structure in spots; very soft, very friable, sticky, plastic; common fine and fine, and few medium roots; many very fine and fine interstitial pores; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C1sicam--9 to 15 inches, white (10YR 8/2) indurated duripan, white (10YR 8/2) moist; mostly strong thin and medium platy structure; massive in spots; brittle; common very fine and fine, and few medium roots; many fine and medium interstitial pores; strongly cemented except 1/4-inch indurated laminar cap at lower boundary; strongly effervescent; strongly alkaline; abrupt smooth boundary.

C2--15 to 25 inches, weathered tuff bedrock.

Thickness of the solum and depth to indurated hardpan ranges from 9 to 19 inches. The A horizon has hue of 10YR, value of 6 or 7 dry and 3 or 4 moist, and chroma of 2 to 4. The A1 horizon is massive, or is weak or moderate very fine granular in structure. Consistence is soft or slightly hard when dry. The B2t horizon has hue of 10YR or 7.5YR, value of 5 or 6 dry and 3 or 4 moist, and chroma of 3 or 4. Texture is heavy clay loam or clay. The average clay content of the argillic horizon when mixed will average between 38 and 45 percent. Color of the hardpan is highly variable having hue of 10YR or 7.5YR, value of 6 to 8 dry and moist, and chroma of 1 to 4. The hardpan is strongly cemented except for a 1/8 to 1/2-inch thick continuous indurated laminae immediately above bedrock that plugs the fractures of the tuff bedrock.

This soil family has been mapped only as a component soil in the Haploxerollic Durorthids-Abruptic Durargids association (54).

Ansping Series

The Ansping series are moderately sloping to strongly sloping soils, that have formed in dissected old alluvial fans mainly from limestone and other sedimentary and volcanic rock. The vegetation consists of black sagebrush, squirreltail, juniper and pinyon pine. They occur at elevations of 6,400 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is about 90 days. Ansping soils occur southeast of Currant near Andrew Spring.

Typical Ansping profiles have a sequence of two main parts: (1) the upper part is a grayish brown to brown gravelly coarse sandy loam about 2 inches thick over a gravelly loam about 10 inches thick; and (2) the lower part to a depth of 62 inches is a series of very weakly to strongly cemented silica-lime hardpans.

Ansping soils are well drained to somewhat excessively drained. The permeability is moderate to moderately slow in the upper 20 inches, and slow through the weakly cemented horizons. Available water capacity is low. The runoff is medium, and the erosion hazard is slight to moderate.

Ansping soils are used for livestock grazing, wildlife habitat, and woodland.

A representative profile of Ansping gravelly coarse sandy loam, 4 to 15 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 0.3 mile south, 0.7 mile west of the northeast corner of section 1, T. 8 N., R. 58 E., or 0.06 mile northeast of Andrew Spring.

(Colors are for dry soil unless otherwise noted).

A11--0 to 2 inches, grayish brown (10YR 5/2) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak thin and medium platy structure; soft, very friable, nonsticky, slightly plastic; few fine and very few medium roots; common very fine and fine vesicular pores; about 20 percent by volume pebbles; strongly effervescent; moderately alkaline; abrupt smooth boundary.

A12--2 to 6 inches, grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky, slightly plastic; common fine and medium roots; few fine tubular pores; about 15 percent by volume partly lime-coated pebbles; strongly effervescent; moderately alkaline; clear smooth boundary.

A13--6 to 9 inches, brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky, slightly plastic; common fine and medium roots; few fine tubular pores; about 20 percent pebbles, 10 percent cobbles, pebbles and cobbles are lime coated; violently effervescent; moderately alkaline; clear smooth boundary.

A representative portion of members recently joined
a to 12 percent alcohol, treatment, it is its type formula. Several in an
numerously gave me a bite upon 0.1 mile scale, 0.7 mile west of
the northeast corner of section 1, T. 8 N., R. 55 E., or 0.00 mile
northwest of Anaton (Route
(Colors are for the soil noise observed).
ALL—0 to 3 inches, brown (IOYR 2\2) strongly coarse
enough face. Very dark grayish brown (IOYR 3\2) moist;
very fine granular, slightly sticky, slightly hygroscopic; com-
(IOYR 3\3) moist; weak fine granular structure; soft;
ALL—3 to 9 inches, brown (IOYR 3\3) strongly loam, dark brown
slightly; clear smooth boundary.
lime-coated happies: strongly effervescent; moderately
ten fine tubular pores; about 12 percent by volume partly
silty, slightly hygroscopic; common fine and medium roots;
very dark grayish brown (IOYR 3\3) moist; moderate
fine granular structure; soft; very friable, slightly
ALL—9 to 15 inches, brown (IOYR 3\3) strongly loam,
about 10 percent happies, 10 percent coupled; happies
non fine and medium roots; ten fine tubular pores;
very friable, slightly sticky, slightly hygroscopic; com-
(IOYR 3\3) moist; weak fine granular structure; soft;
many coupled via lime coated; strongly effervescent;
moderately alkaline; clear smooth boundary.

C1ca--9 to 12 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky, slightly plastic; common fine and medium roots; few fine tubular pores; about 35 percent pebbles 1/3 are hardpan fragments; common films and fine soft masses of lime; violently effervescent; moderately alkaline; abrupt wavy boundary.

C2sica--12 to 20 inches, white (10YR 8/2) very gravelly clay loam, very pale brown (10YR 7/3) moist; massive; very hard, firm, slightly sticky, slightly plastic; very few fine and medium roots in soft pockets; about 45 percent pebbles and 15 percent cobbles weakly cemented with lime and silica; few discontinuous strongly cemented areas; violently effervescent; moderately alkaline; abrupt wavy boundary.

C3sica--20 to 32 inches, light gray (10YR 7/2) very gravelly clay loam, very pale brown (10YR 7/3) moist; massive; very hard, firm, slightly sticky, slightly plastic; very few fine and medium roots; pores are lime-filled; about 70 percent pebbles and a few cobbles very weakly cemented with lime and silica; few moderately cemented areas; violently effervescent; moderately alkaline; abrupt wavy boundary.

C4sica--32 to 39 inches, white (10YR 8/2) very gravelly clay loam, very pale brown (10YR 7/3) moist; massive; very hard, firm, slightly sticky, slightly plastic; very few fine and medium roots; pores are lime-filled; about 50 percent by volume pebbles, weakly cemented with lime and silica; few discontinuous strongly cemented laminae; violently effervescent; moderately alkaline; abrupt wavy boundary.

C5sica--39 to 50 inches, very pale brown (10YR 8/3) very gravelly loam, very pale brown (10YR 7/3) moist; massive; very hard, firm, nonsticky, nonplastic; very few fine and medium roots; pores are lime-filled; about 65 percent pebbles weakly cemented with lime and silica; violently effervescent; moderately alkaline; abrupt wavy boundary.

C6sicam--50 to 62 inches, light gray (10YR 7/2) strongly cemented lime-silica hardpan, light yellowish brown (10YR 6/4) moist; massive; extremely hard, extremely firm; soil mass is effervescent with violently effervescent spots; strongly alkaline.

Depth of the solum to a weakly cemented lime-silica hardpan is 10 to 16 inches. Depth to the calcic horizon is 8 to 12 inches. It is friable in the upper 2 to 4 inches and weakly cemented with lime and silica in the lower part. The A horizon has hue of 7.5YR or 2.5Y, value is 4 or 5, and chroma is 2 or 3. The texture is gravelly to very gravelly loam to sandy loam. Structure is platy in the upper part and granular or subangular blocky in the lower part. The C horizons are enriched with lime and some silica. Gravel content ranges from 25 to 80 percent in the various horizons and averages about 60 percent. The C horizons alternate from friable or slightly hard to weakly cemented. Texture is gravelly sandy loam to very gravelly loam with 12 to 25 percent clay. Strongly cemented hardpans are common at 45 to 55 inches depth. A few pedons are underlain by tuffs or various sedimentary rocks at depths below 60 inches.

Ansping gravelly coarse sandy loam, 4 to 15 percent slopes (28).--This soil occurs as irregular-shaped areas on old strongly dissected alluvial fans. Typically, the ridge crests or hilltops are gently sloping and the sideslopes are strongly sloping. The profile is the same as that described for the series. Included are about 30 percent Nuc and Fanu soils, and other gravelly soils.

The vegetation consists of pinyon pine and juniper with a sparse understory of black sagebrush, ephedra and squirreltail.

The runoff is medium, and the erosion hazard is slight to moderate.

Ansping-Aridic Calcixerolls association (29).--This association occurs as irregular-shaped areas on strongly dissected shale beds that are capped with old alluvium from limestone. It consists of about 40 percent Ansping gravelly loam, 4 to 8 percent slopes; 25 percent Aridic Calcixerolls, fine, carbonatic, frigid very gravelly loam, 15 to 30 percent slopes; and 20 percent Calciorthidic Haploxerolls, fine, montmorillonitic, frigid clay loam, 4 to 8 percent slopes. Included are about 15 percent soil that is similar to Ansping on ridgetops, Xerertic Camborthids on some sideslopes, shallow Typic Torriorthents on some eroded sideslopes, and Fanu soils in narrow drainageways.

The moderately sloping Ansping soils are on ridgetops. The profile for this soil is essentially the same as that for the series. The moderately steep Aridic Calcixerolls are on sideslopes below Ansping soils. They developed in colluvium from shale and limestone. The Aridic Calcixerolls profile is essentially the same as that described for the soil family. The moderately sloping Calciorthidic Haploxerolls are on narrow flood plains, alluvial fans and terraces. They have a profile that is essentially the same as that described for the soil family.

The vegetation on Ansping soils consists of pinyon pine, cliffrose, and juniper with an understory of black sagebrush, squirreltail, and Indian ricegrass. Vegetation on the Aridic Calcixerolls is pinyon pine, juniper, black sagebrush, squirreltail, Indian ricegrass, and beardless bluebunch wheatgrass. The Calciorthidic Haploxerolls support vegetation consisting of pinyon pine, juniper, cliffrose, desert peach, big sagebrush, Great Basin wildrye, squirreltail, and Indian ricegrass.

The runoff on the soils in this unit is medium. Ansping soils have slight to moderate erosion hazard. Erosion hazard on the Aridic Calcixerolls is moderate, and for the Calciorthidic Haploxerolls it is slight to moderate by water.

Aridic Calcixerolls, fine, carbonatic, frigid

The soils in the area representimg this family are moderately steep and have formed in colluvium from shale and limestone. These soils are on sideslopes of strongly dissected shale beds that have ridge tops capped with alluvium from limestone. The vegetation consists of pinyon pine, juniper, black sagebrush, squirreltail, Indian ricegrass, and beardless bluebunch wheatgrass. They are at elevations of 6,600 to 7,000 feet. The mean annual air temperature is 42° to 44° F.; mean annual precipitation is 10 to 12 inches; and the frost-free season is about 90 days. They occur southeast of Currant near Big Spring.

Typical soil family profiles have a seqence of four main parts: (1) a surface layer of brown very gravelly loam about 3 inches thick; (2) a pale brown gravelly clay loam about 9 inches thick; (3) very pale brown gravelly clay about 18 inches thick; and (4) a light olive brown shaly clay that extends to 60 inches.

These soils are somewhat excessively drained. They have moderately slow permeability. Available water capacity is moderate. The runoff is medium, and the erosion hazard is moderate.

These soils are used for livestock grazing, wildlife habitat, and woodland. They are too steep to be suitable for irrigated cropland.

A representative profile of Aridic Calcixerolls, fine, carbonatic, frigid, very gravelly loam, 15 to 30 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 0.4 mile south, 0.55 mile west of the northeast corner of section 19, T. 8 N., R. 59 E., or about 1.6 mile north of Big Spring.

(Colors are for dry soil unless otherwise noted).

A11--0 to 3 inches, brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, friable, slightly sticky, slightly plastic; few fine and medium roots; common very fine vesicular pores; about 60 percent by volume limestone, and a few chert and calcite pebbles; violently effervescent; moderately alkaline; abrupt smooth boundary.

A12--3 to 6 inches, brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, firm, sticky, plastic; common fine, medium and coarse roots; common fine interstitial pores; about 20 percent by volume pebbles; violently effervescent; moderately alkaline; clear smooth boundary.

C1ca--6 to 12 inches, pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; massive; soft, friable, sticky, plastic; common fine, medium and coarse roots; common fine tubular pores; about 25 percent by volume pebbles; pebbles thinly coated with lime; common lime films; violently effervescent; moderately alkaline; clear smooth boundary.

C2ca--12 to 30 inches, very pale brown (10YR 7/3) gravelly clay, brown (10YR 5/3) moist; massive; slightly hard, firm, very sticky, very plastic; few fine, medium and coarse roots; common fine tubular pores; about 25 percent by volume lime-coated pebbles; many lime films, few fine soft masses and a few concretions of lime; violently effervescent; moderately alkaline; clear wavy boundary.

C3--30 to 60 inches, light olive brown (2.5Y 5/4) shaly clay, olive brown (2.5Y 4/4) moist; massive; hard, firm, very sticky, very plastic; very few medium and coarse roots; nonporous; few thin seams of lime in upper part; few masses of shale are noneffervescent; main body is slightly effervescent; moderately alkaline.

Depth of the solum to shaly clay or shale is 25 to 45 inches. Depth to the calcic horizon is 6 to 14 inches. Hue is 10YR or 2.5YR, value is 2 thru 6, and chroma is 2 thru 6. The A horizon is 6 to 9 inches thick. The C horizon becomes more clayey and less gravelly with depth. The ca horizon is 10 to 40 inches thick. The underlying shale ranges from noneffervescent to strongly effervescent.

This soil family has been mapped only as a component soil in Ansping-Aridic Calcixerolls association (29).

Aridic Calcixerolls, loamy-skeletal, mixed, frigid, shallow

The soils in the area representing this soil family are strongly sloping to moderately steep and have formed in tuffs. The vegetation is pinyon pine, juniper, phlox, cliffrose and black sagebrush. They are at elevations ranging from 6,500 to 7,000 feet. The mean annual precipitation is 10 to 12 inches; mean annual air temperature is 42° to 46° F.; and the frost-free season is about 90 days. They are southeast of Currant near Bald Mountain.

Typical soil family profiles have a sequence of three main parts: (1) a surface layer of grayish brown gravelly loam about 6 inches thick; (2) a layer of white very gravelly loam about 9 inches thick; and (3) white massive weathered tuffs that extend to hard partly weathered tuff at 46 inches.

These soils are well drained. The permeability is moderate to the weathered tuff, then slow. Available water capacity is low. The runoff is medium, and the erosion hazard is moderate.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Aridic Calcixerolls, loamy-skeletal, mixed, frigid, shallow gravelly loam, 8 to 30 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 1,000 feet west and f00 feet of the northeast corner of section 8, T. 8 N., R. 59 E., or 0.3 mile south of mouth of Albert Springs draw, 0.1 mile east up ridge.

(Colors are for dry soil unless otherwise noted).

A11--0 to 1 inch, grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; very weak thin platy structure; soft, very friable, slightly sticky, slightly plastic; few fine roots; few fine vesicular pores; about 40 percent by volume tuff gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

A12--1 to 6 inches, grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, sticky, plastic; many fine to very coarse roots; common fine and very fine interstitial pores; about 10 percent by volume lime-coated gravel, about 10 percent by volume lime-coated cobbles; violently effervescent; moderately alkaline; abrupt wavy boundary.

C1ca--6 to 15 inches, white (10YR 8/2) very gravelly loam, grayish brown (10YR 5/2) moist; highly weathered lime-enriched tuffs, friable when moist; many fine to very coarse roots; few very fine interstitial pores; about 60 to 80 percent tuff gravel; violently effervescent; moderately alkaline; clear wavy boundary.

C2ca--15 to 46 inches, white (10YR 8/2) weathered tuffs, grayish brown (10YR 5/2) moist; massive; hard, firm, nonsticky, nonplastic; few fine to coarse roots; about 85 percent by volume fine tuff fragments; pockets are weakly effervescent; layers at 45° angle, 1 to 2 inches thick are lime enriched and harder than the mass; moderately alkaline; abrupt wavy boundary.

R--46 to 48 inches, white (10YR 8/2) partly weathered tuffs, grayish brown (10YR 5/2) moist; around cobbles and stones; massive; very hard; very few roots in fractures; strongly effervescent; moderately alkaline.

The solum thickness and depth to the Cca horizon is 6 to 12 inches. It has a hue of 10YR. Value is 5 through 7 dry and 3 through 5 moist, and chroma is 2 or 3. The A horizons are 2 to 3 units of value darker moist and dry than the C horizons. The C horizons are lime-enriched tuffs ranging from highly weathered to partely weathered in the R horizon.

Aridic Calcixerolls-Fanu association (30).--This association occurs as irregular-shaped areas on dissected tuff beds in narrow flood plains. It consists of about 60 percent Aridic Calcixerolls, loamy-skeletal, mixed, frigid, shallow, gravelly loam, 8 to 30 percent slopes; and about 30 percent Fanu gravelly fine sandy loam, 2 to 8 percent slopes. Included are about 10 percent tuff outcrops, Loza, and Drewing soils.

The Aridic Calcixerolls occur on ridges and sideslopes. The profile for this soil is similar to that described for the soil family. The gently to moderately sloping Fanu soil occurs on narrow flood plains. They have a profile similar to that described for the series.

The vegetation on the Aridic Calcixerolls consists of pinyon, juniper, phlox, cliffrose, and black sagebrush. The vegetation on the Fanu soil consists of big sagebrush, Great Basin wildrye, squirreltail, rabbitbrush, pinyon and juniper.

The Aridic Calcixerolls have medium runoff, and the erosion hazard is moderate. The Fanu soil has medium runoff, and a slight to moderate erosion hazard.

Aridic Durixerolls, fine-loamy, mixed, frigid

The soils in the area representing this soil family are nearly level to gently sloping. They formed on old alluvial fans from limestone and shale. The vegetation consists of big sagebrush, Thurber needlegrass, Sandberg bluegrass, and squirreltail. They are at elevations of 6,400 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 41° to 44° F.; and the frost-free season is about 100 days. These soils are in Area 1.

Typical soil family profiles have a sequence of four main parts: (1) a pale brown gravelly loam surface layer about 4 inches thick; (2) a pale brown to brown gravelly clay loam layer about 13 inches thick; (3) a very pale brown to brown very gravelly sandy loam layer about 18 inches thick; and (4) a light gray to white strongly cemented hardpan that extends to at least 42 inches.

These soils are well drained. They have moderately slow permeability above the pan. Available water capacity is low. Runoff is medium, and the erosion hazard is slight.

They are used for livestock grazing and wildlife habitat.

A representative profile of Aridic Durixerolls, fine-loamy, mixed, frigid, gravelly loam, 0 to 4 percent slopes, rangeland, is in in White Pine County, Nevada at a site about 50 feet south and 50 feet west of the apparent northeast quarter corner of section 13, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1---0 to 4 inches, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; massive; very soft, very friable, slightly sticky, slightly plastic; root crowns; many very fine and fine interstitial pores; neutral; abrupt smooth boundary.

B21t---4 to 11 inches, brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; strong fine and medium angular and subangular blocky structure; hard, friable, sticky, plastic; many very fine and fine roots; many very fine and fine interstitial, and few very fine tubular pores; many thin clay films on faces of peds and few thin clay films lining pores; neutral; abrupt smooth boundary.

smooth pondweed.

and ten fifth clay lime liming borer: ventral: sprout

tadpolar borne: many fifth clay lilac on faces of bags

very time and time interstitial, and two very time

article, basaltic: many very time and time roots: many

sandier and independent plucky strumpets: park, triple:

prown (IOYR 3\3) moist: strong time and medium

A representative profile of Arctic Dextrocolle, time-loamy.

mixed, frigid, granvelly loam, 0 to 4 percent slopes, rendzinad, is

in the White Pine County, Nevada at a site about 20 feet south and

20 feet west of the abbarent northeast drystar corner of section 13,

T. 18 N., R. 24 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 4 inches, pale prown (IOYR 6\3) gravelly loam, dark

prown (IOYR 3\3) moist; massive; very soft, very

triple, slightly article. slightly basaltic: root

:lime: many very time and time interstitial borse:

neutral: sprout smooth pondweed.

BA1--4 to 11 inches, prown (IOYR 5\3) breezily clay loam, dark

B22t--11 to 17 inches, pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; strong fine and medium angular blocky structure; very hard, firm, sticky, plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; many thin clay films as bridges and on faces of peds, and few thin clay films lining pores; 15 to 25 percent gravel; neutral; abrupt smooth boundary.

B3--17 to 24 inches, brown (10YR 5/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky, nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; mildly alkaline; abrupt smooth boundary.

C2casi--24 to 35 inches, pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; hard, friable, nonsticky, nonplastic; few very fine and micro roots; common fine and medium interstitial pores; gravels are lime and silica coated; 80 to 90 percent gravel; strongly effervescent matrix, and violently effervescent on lime-coated gravel; strongly alkaline; abrupt smooth boundary.

C3casim--35 to 42 inches, light gray (10YR 7/2) and white (10YR 8/2) strongly cemented hardpan, yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4) moist; massive; very hard, very firm, nonsticky, nonplastic; violently effervescent.

The solum ranges from 10 to 17 inches, and the depth to strongly cemented hardpan ranges from 27 to 37 inches. The A1 horizon has hue of 10YR, value of 5 or 6 dry, 3 moist, and chroma of 2 or 3. The A1 horizon is massive or is weak or moderate very fine and fine granular structure. Consistence ranges from soft to slightly hard when dry. The B2t horizon has hue of 10YR, value of 5 to 6 dry, 3 or 4 moist, and chroma of 2 or 3. Structure is strong fine and medium angular or subangular blocky. Texture is gravelly clay loam but may include subhorizons of very gravelly clay loam or loam. Color of the hardpan is variable, but includes hue of 10YR or 7.5YR, value is 6 to 8 dry, 4 to 6 moist, and chroma is 2 to 4. The entire hardpan is massive with a few thin indurated spots occurring in scattered areas.

Aridic Durixerolls, fine-loamy, mixed, frigid, gravelly loam, 0 to 4 percent slopes (31).--This soil occurs as irregular-shaped areas on old alluvial fan piedmonts. The soil has a profile described as representative for the soil family. Included are about 10 percent Belmill and Nark soils, and Haploxerollic Durorthids.

The vegetation consists primarily of sown crested wheatgrass. Native vegetation consists of big sagebrush.

Runoff is medium, and the erosion hazard is slight.

Belmill Series

The Belmill series are nearly level to moderately sloping soils that formed on old alluvial fans from limestone and shale. The vegetation consists of big sagebrush, Thurber needlegrass, Sandberg bluegrass, squirreltail, and a few pinyon and juniper trees. They are at elevations of 6,400 to 6,800 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is 90 to 100 days. Belmill soils are in Areas 1 and 5.

Typical Belmill soil profiles have a sequence of three main parts: (1) a pale brown gravelly sandy loam surface layer about 3 inches thick; (2) a pale brown to brown gravelly loam about 10 inches thick; and (3) a pale brown very gravelly sandy loam over very gravelly loamy sand that extends to 50 inches.

Belmill soils are well drained. They have moderate permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

This soil is used for livestock grazing and wildlife habitat.

Mate soil is used for livestock grazing and multiple pasture.

Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

Bedmill soils are very shallow. They have moderate permeability. Available water capacity is low to very low. Runoff is medium to rapid, and the erosion hazard is moderate to severe.

These soils are used for livestock grazing and wildlife habitat.

(5) a base promm to promm gravelly loam about 10 inches thick and (6) a base promm to promm gravelly loam over very gravelly loamy sand that extends to 20 inches.

Bedmill soils are very shallow. They have moderate permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

These soils are used for livestock grazing and wildlife habitat.

Bedmill series

The Bedmill series consists of moderately well drained soils that formed in old alluvial fans from limestone and shale. The

average annual precipitation is about 16 inches, average annual air temperature is 45° to 47°F, and the frost-free season is 90 to 100 days. Bedmill soils are on

landscapes, mountains, and hills in the northern part of the area. They

are at elevations of 6,000 to 6,600 feet. Slopes are 0 to 30 percent.

Typical pedon of Bedmill gravelly loam, 0 to 4 percent slopes, in a

(1) a base promm gravelly loam about 4 inches thick and

A representative profile of Belmill gravelly sandy loam, 0 to 4 percent slopes, rangeland, is in White Pine County, Nevada at a site about 500 feet south and 200 feet west of the northeast corner of section 13, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak or moderate very fine granular structure; very soft, very friable, non-sticky, nonplastic; many very fine and fine roots; and root crowns; many very fine and fine interstitial pores; 25 percent gravel; neutral; abrupt smooth boundary.

B21t--3 to 6 inches, brown (10YR 5/3) gravelly loam, very dark grayish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky, plastic; many very fine and fine roots; many very fine tubular pores; many thin clay films as bridges, and few thin clay films on faces of peds; 20 to 30 percent gravel; neutral; abrupt smooth boundary.

B22t--6 to 13 inches, brown (10YR 5/3) gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky, plastic; many very fine and fine roots; many very fine tubular pores; many thin clay films as bridges, and few thin clay films on ped faces; 20 to 30 percent gravel; netural; abrupt smooth bounadry.

B3t--13 to 19 inches, pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; mostly massive, strong fine angular blocky structure in spots; very hard, friable, sticky, plastic; common very fine and fine roots; many very fine and fine interstitial pores; common thin clay films as bridges; 50 to 60 percent gravel; neutral; abrupt smooth boundary.

C1sica--19 to 30 inches, pale brown (10YR 6/3) very gravelly light sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky, nonplastic; few very fine and fine roots; common fine and medium interstitial pores; many fine distinct white (10YR 8/1) lime coating gravel, also opal coats; 75 to 85 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

C2sica--30 to 50 inches, pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 4/3) moist; massive; loose, nonsticky, nonplastic; few very fine and fine roots, and many very fine inped roots in spots; common fine and medium interstitial pores; common fine distinct white (10YR 8/1) lime and silica coats on gravel; 75 to 85 percent gravel; moderately alkaline.

Thickness of the solum ranges from 11 to 20 inches. The solum is noncalcareous and the C horizons are calcareous. The reaction ranges from neutral in the A1 and Bt horizons, and increases to moderately alkaline in the C horizons. Color of the A1 horizon includes hue of 10YR, value of 5 to 6 dry and 2 or 3 moist, and chroma of 2 or 3. When the surface 7 inches is mixed, the color value is less than 5.5 dry. The A1 horizon is weak or moderate, fine granular structure. Consistence ranges from soft to slightly hard when dry. The color of the B2t horizon includes hue of 10YR, value of 4 to 6 dry and 3 to 4 moist, and chroma of 3 or 4. Structure is moderate, fine and medium subangular blocky in the upper part and grades to weak subangular blocky in the lower part. Texture is gravelly loam in the upper part and grades to very gravelly sandy loam in the lower B3t. Average gravel content of the argillic horizon ranges from 37 to 45 percent. Color of the C horizons includes hue of 10YR, value of 6 or 7 dry and 4 or 5 moist, and chroma of 3 or 4. Gravel content of the C horizons ranges from 65 to 85 percent.

Belmill gravelly sandy loam, 0 to 4 percent slopes (32).--This soil occurs as rather long, linear areas on old alluvial fan piedomonts. This soil is the same as that described for the series. Included are about 10 percent Aridic Durixerolls, and a soil similar to Belmill.

The vegetation consists primarily of crested wheatgrass. Native vegetation is primarily big sagebrush.

Runoff is medium, and the erosion hazard is slight to moderate.

Belmill gravelly loam, 4 to 8 percent slopes (33).--This soil occurs as irregular-shaped areas on old alluvial fan piedmonts. The soil is essentially the same as that described for the series, except for slope. Included are about 10 percent Buster and Nark soils.

The vegetation consists primarily of big sagebrush with scattered Indian ricegrass and pinyon pine.

Runoff is medium, and the erosion hazard is slight to moderate.

Bravane Series*

The Bravane series are moderately sloping soils that formed in old alluvial fans from volcanic flow rock and tuffs. The vegetation consists of galleta grass, spiny hopsage, rabbitbrush, and scattered big sagebrush and black sagebrush. They are at elevations of 6,200 to 6,500 feet where the mean annual precipiation is 8 to 10 inches; mean annual air temperature is 45° to 48° F.; and the frost-free season is about 110 days. Bravane soils are in Area 14.

Typical Bravane soil profiles have a sequence of three main parts: (1) a surface layer about 5 inches thick that is pale brown to light gray stony loamy sand in the upper part and sandy loam in the lower part; (2) a brown clay layer about 19 inches thick; and (3) a white to light gray hardpan high in gravel and cobbles that extends to 40 inches.

Bravane soils are well drained and have slow permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is moderate.

These soils are used for livestock grazing and wildlife habitat.

*Taxadjunct to the series - These soils have prismatic structure in the B2t horizons and strongly cemented duripans at 30 to 40 inches.

to 40 inches.

If the 2ft positions had actually remained quiescent or
[illegible] to the centre - there could have [illegible] maximum
[illegible] are used for investigating amplitude perfect.

Those cells are [illegible] vertical movement of the water
[illegible] to 40 inches.

Next examine to 24 inches. Remove it again, and the stream [illegible]
[illegible] cohesion is lost. Remove it again, and the stream [illegible]
[illegible] is modified.

Remove cells are well distributed and have a good permeability. Wash-
[illegible] cells are used for investigating amplitude perfect.

These cells are used for investigating amplitude [illegible]
[illegible] to the centre - there could have [illegible] maximum
if the 2ft positions had actually remained quiescent or 20
to 40 inches.

A representative profile of Bravane stony loamy sand, 4 to 8 percent slopes, rangeland, is in Nye County, Nevada about 0.2 mile south along main trail from the northeast side of Area 14 at a site about 0.4 mile west, 0.85 mile south of the northeast corner of section 34, T. 11 N., R. 54 E.

(Colors are for dry soil unless otherwise noted).

A11--0 to 1 inch, pale brown (10YR 6/3) stony loamy sand, dark brown (10YR 3/3) moist; single grained; loose, nonsticky, nonplastic; root crowns only; many fine interstitial pores; 30 to 45 percent gravel, 5 percent cobbles; loamy sand is mounded under sagebrush plants; moderately alkaline; abrupt smooth boundary.

A12--1 to 5 inches, light gray (10YR 7/2) sandy loam, brown (10YR 4/3) moist; weak fine platy structure; soft, very friable, slightly sticky, slightly plastic; common fine to coarse roots; common very fine and fine vesicular pores; 10 percent gravel, 5 percent cobbles; moderately alkaline; abrupt smooth boundary.

B21t--5 to 13 inches, brown (7.5YR 5/4) clay, brown (7.5YR 5/4) moist; weak coarse prismatic parting to moderate fine and medium blocky structure; hard, firm, sticky, plastic; common fine to coarse roots; common very fine and fine interstitial and tubular pores; 10 percent gravel, 5 percent cobbles; clay films on faces of peds; few films of lime in lower part and on lower side of gravel; non-effervescent; moderately alkaline; clear smooth boundary.

B22t--13 to 24 inches, brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; strong fine and medium blocky structure; hard, firm, sticky, plastic; few fine roots; common fine and very fine interstitial and tubular pores; 10 percent gravel, 5 percent cobbles; strong clay films; organic films on faces of peds; pockets of sandy clay loam in lower part of horizon; some peds are coated with lime; noneffervescent to effervescent; moderately alkaline; abrupt wavy boundary.

IIC1sica--24 to 36 inches, white (10YR 8/2) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; very hard, firm, brittle; very few fine roots; few fine and very fine tubular pores; about 60 percent gravel; 20 percent cobbles; violently effervescent; moderately alkaline; clear smooth boundary.

IIC2sica--36 to 40 inches, light gray (10YR 7/2) strongly cemented very cobbly duripan with discontinuous laminar cap.

Thickness of the solum and depth to the calcic horizon is 22 to 30 inches. The mean annual soil temperature is 47° to 50° F. The control section is clay loam to clay with 36 to 45 percent clay. In many pedons there is no loose loamy sand that overlies the vesicular layer. The A horizon has hue of 10YR, value of 6 or 7, and chroma of 2 thru 4. Texture is gravelly loamy sand or sandy loam. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. The percent of stones, gravel and cobbles ranges from 5 to 30. The IICsica horizon ranges from weakly cemented to cemented very gravelly or very cobbly sandy loam and loamy sand.

Bravane series have been mapped only as a component soil in the Yody-Bravane association (88).

Bruffy Series

The Bruffy series are gently sloping soils formed on flood plains in mixed alluviuvm from dacite, andesite, tuffs, shale and sandstone. The vegetation consists of big sagebrush, shadscale, spiny hopsage, Indian ricegrass, and squirreltail. They are at elevations of 6,400 to 6,600 feet where the mean annual precipiation is about 10 inches; mean annual air temperature is 43° to 44° F.; and the frost-free season is 90 to 100 days. They are in Area 2.

Typical Bruffy profiles have a sequence of two main parts: (1) a pale brown to light yellowish brown silt loam layer about 20 inches thick; and (2) a yellowish brown massive gravelly sandy clay loam layer that extends to at least 45 inches.

Bruffy soils are well drained. They have moderately slow permeability. Available water capacity is high. The runoff is slow, and the erosion hazard is moderate. They are susceptible to gullying.

These soils are used for livestock grazing, recreation, and wildlife habitat.

A representative profile of Bruffy silt loam, 2 to 4 percent slopes, rangeland, is in Area 2 at at site about 0.05 mile east and 0.1 mile south of the northwest corner of section 3, T. 15 N., R. 55 E. (Colors are for dry soil unless otherwise noted).

A1--0 to 4 inches, pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, sticky, plastic; common very fine roots; common very fine and fine vesicular pores; 5 percent gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C1--4 to 20 inches, light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky, plastic; common very thru medium roots; common fine tubular and interstitial pores; 5 percent gravel; weakly effervescent; moderately alkaline; clear smooth boundary.

IIC2--20 to 45 inches, yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky, plastic; few very fine and fine roots; common fine tubular and interstitial pores; 20 percent gravel; common shale fragments; strongly effervescent; moderately alkaline.

The A and C1 horizons have silt loam texture with 20 to 25 percent clay. The IIC2 horizon ranges from gravelly to very gravelly sandy loam to sandy clay loam. The hue is 10YR, value of 5 or 6, and chroma of 3 or 4.

Bruffy silt loam, 2 to 4 percent slopes (34).--This soil occurs as long, narrow bands on flood plains where they are subject to occasional flooding. The profile is similar to that described for the series. Included are about 15 percent Xerollic Haplargids on old alluvial fans that are slightly higher in the local landscape than Bruffy soils.

The runoff is slow, and the erosion hazard is moderate.

Buster Series*

The Buster series are nearly level to moderately sloping soils that have formed on old alluvial fans from various volcanic and sedimentary sources. The vegetation is big sagebrush, rabbitbrush, squirreltail, and a few juniper trees. They are at elevations of 6,150 to 6,800 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is about 90 days. These soils are in Areas 1, 2, 3, 4, 5, and 10.

Typical Buster profiles have a sequence of three main parts: (1) a pale brown gravelly loam surface layer about 3 inches thick; (2) a brown clay loam and light yellowish gravelly sandy clay loam layer about 29 inches thick; and (3) a very pale brown gravelly sandy loam layer that is weakly silica cemented and extends to 60 inches.

Buster soils are well drained. They have moderately slow permeability. Available water capacity is moderate. Runoff is medium, and the erosion hazard is slight to moderate.

These soils are used for livestock grazing and wildlife habitat.

*Taxadjunct to the Buster Series - This soil lacks the IIC horizon of lacustrine deposits and has Csica horizons that are not continuously cemented.

that are not continuously connected.

fraction of insensitive phonetic end pen dance portions

"Awakening to the finest gestes - Life and leave the IIC

These cells are used for livestock fencing and slightly palpitant.

the erosion penalty is subject to moderate.

spelling. Variable water capacity is economic. Smooth is medium, and

finest cells are well planted. Two pwn movement also perm-

layer that is usually silica cemented and extends to 20 inches.

about 85 inches thick) and (3) a very hard pavo nitrogen sandy loam

pwon clay loam and light yellowish brown silty sandy clay loam layer

a bed pwon gravelly loam noticed layer upon (inches thick! (5) a

(Abrupt pwon boundaries pwo a sequence of three main parts:

2' and 20.

five seven is upon 90 cyds. These cells are in Areas 1', 3', 1', 4'

fracted! mean summer air temperature is 43° to 52° F') and are frost-

0,120 to 0,800 feet where the mean annual precipitation is 10 to 15

equilibrium,' and a two layer cross. They are at elevations of

measure scarce. The vegetation is old sagebrush' amphitheatre'

that pwo forms on old alluvial fans from nearly pwo bed-

Upper Soils

The Upper soils are usually level to moderately sloping soil

A representative profile of Buster gravelly loam, 2 to 8 percent slopes, rangeland, is in White Pine County, Nevada in the south-central part of Area 2, at a site about 800 feet northeast of intersection of E-W trail and trail in large draw; 0.1 mile south, 0.15 mile west of the northeast corner of section 11, T. 15 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, friable, slightly sticky, slightly plastic; few root crowns; many very fine and fine vesicular pores; 20 percent gravel; gravel covers about 40 percent of the surface; 1 to 3 inches of loamy sand is mounded under sagebrush plants; moderately alkaline; abrupt smooth boundary.

B21t--3 to 8 inches, brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; many fine to medium roots; common very fine and fine tubular and interstitial pores; 10 percent gravel; patchy clay films; moderately alkaline; clear smooth boundary.

B22si--8 to 20 inches, light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky, slightly plastic; about 25 percent of the soil mass is weakly cemented with silica and is firm moist; common very fine and fine roots; common very fine and fine tubular and interstitial pores; 20 percent gravel; patchy clay films; moderately alkaline; clear wavy boundary.

B23tca--20 to 32 inches, light yellowish brown (10YR 6/4) gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; hard, friable, sticky, plastic; few fine and very fine roots; common very fine and fine tubular and interstitial pores; 15 percent gravel; patchy clay films; few durinodes; common lime films mainly on faces of peds; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Csica--32 to 60 inches, very pale brown (10YR 7/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, nonsticky, nonplastic; very few very fine and fine roots; common very fine and fine tubular and interstitial pores; 25 percent gravel; few thin discontinuous laminar layers; few durinodes; few pockets are extremely hard dry, extremely firm moist; many soft pockets; violently effervescent; moderately alkaline.

fireplace, article. brassie: low fire and very fine roots; common very fine and fine loamy fine and fine subsoil; 12 percent gravel; heavily clay lined; low quiniodes; common lime fills mainly on faces of peds; strongly effervescent; moderately alkaline; apricot new pondweed.

Carter---35 to 60 inches, very pale brown (10YR 8/4) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; mainly hard, friable, noncalcic, nonplastic; very few fine and fine roots; common very fine and fine tubular pores; 15 percent gravel; few faint discontinuous lamellae; few quiniodes; few peds are extremely hard dry, extremely firm moist; many soft

Bessie---8 to 20 inches, light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, very firm moist, moderately sticky moderately alkaline.

Bessie---20 to 35 inches, light yellowish brown (10YR 6/4) gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; hard, friable, moderately sticky, moderately alkaline; 25 percent gravel; few fine and fine roots; common very fine and fine tubular and interstitial pores; 50 percent gravel; few quiniodes; few peds are extremely hard dry, extremely firm moist; many soft to fine soil mass is weakly cemented with silica and strongly effervescent; moderately alkaline; apricot new pondweed.

Carter---35 to 60 inches, very pale brown (10YR 8/4) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, noncalcic, nonplastic; very few fine and fine roots; common very fine and fine tubular and interstitial pores; 15 percent gravel; few faint discontinuous lamellae; few quiniodes; few peds are extremely hard dry, extremely firm moist; many soft

fireplace, article. brassie: low fire and very fine roots; common very fine and fine tubular and interstitial pores; 12 percent gravel; heavily clay lined; low quiniodes; common lime fills mainly on faces of peds; strongly effervescent; moderately alkaline; apricot new pondweed.

The solum thickness and depth to the calcic horizon is 22 to 38 inches. The percent by volume of gravel ranges from 10 to 30. The A horizon has hue of 10YR, value of 6 or 7, and chroma of 2 thru 4. The texture is gravelly loam to loamy sand. The Bt horizon has hue of 7.5YR or 10YR, value of 4 thru 6 and chroma of 3 or 4. The texture is clay loam to gravelly sandy clay loam with 20 to 35 percent clay. The Csica horizon has hue of 10YR, value of 6 or 7 , and chroma of 2 thru 6. The texture ranges from gravelly sandy loam to loamy sand.

Buster gravelly sandy loam, 2 to 8 percent slopes (35).--This soil occurs as irregular-shaped areas on gently sloping to gently rolling, old alluvial fans. The profile is similar to that described for the series, except the surface texture is gravelly sandy loam, the B21t horizon is sandy clay loam, and the solum is thinner. Included are about 15 percent Xerollic Calciorthids developed in soft sandstone, and loamy-skeletal Durixerollic Haplargids on steeper ridgetops. They are easily recognized by having dominant juniper vegetation.

The vegetation on this soil is big sagebrush, Indian ricegrass, squirreltail, rabbitbrush, and blue grama.

The runoff is medium, and the erosion hazard is slight to moderate.

Buster loam, 0 to 4 percent slopes (36).--This soil occurs as irregular-shaped areas on old alluvial fan piedmonts. The profile is similar to that described for the series, except the surface is not gravelly and the solum is thinner. Included are about 10 percent Bylo, Lien, and Belmill soils.

The vegetation consists primarily of big sagebrush, Indian ricegrass, rabbitbrush, squirreltail, and small amounts of needle-and-thread grass.

Runoff is medium, and the erosion hazard is slight to moderate.

Buster-Handy association (37).--This association occurs as irregular-shaped areas on gently sloping to gently rolling old alluvial fans. It consists of 55 percent Buster gravelly sandy loam, 2 to 8 percent slopes; and 30 percent Handy gravelly clay loam, 2 to 8 percent slopes. Included are about 15 percent Typic Camborthids along drainageways, and fine-loamy Xerollic Haplargids on a few of the fans.

Narrow drainageways carry water from the component soils in this unit, and from higher-lying flow rock and shale beds. The Handy soil is generally near shale outcrops, and are higher in the local landscape than the Buster soil. The profile for the Buster soil is similar to that described for the series, except the surface texture is gravelly sandy loam, the B21t horizon is sandy clay loam, and the solum is thinner. The profile for the Handy soil is essentially the same as that described for the series.

The dominant vegetation on the component soils in this unit is big sagebrush, rabbitbrush, squirreltail, and Indian ricegrass. There are a few plants of spiny hopsage and shadscale on the Handy soil. These soils have medium runoff. The erosion hazard for the Buster soil is slight to moderate; for Handy soil it is slight.

Buster-Pedoli association (38).--This association occurs as irregular-shaped areas on gently sloping to gently rolling old, mixed alluvial fans that are slightly lower than the surrounding landscape. It consists of 60 percent Buster gravelly loam, 2 to 8 percent slopes; and 30 percent Pedoli gravelly sandy loam, 2 to 8 percent slopes. Included are about 10 percent Typic Camborthids along drainageways, and Aridic Argixerolls in higher lying areas.

Narrow drainageways carry runoff from the component soils in this unit, and from higher-lying soils. The Buster soils are slightly higher in the landscape and in more narrow areas than the Pedoli soils. The profiles for the component soils are essentially the same as that described for the series.

The vegetation on the soils in this unit consists of big sagebrush and small amounts of rabbitbrush, Great Basin wildrye, squirreltail; Indian ricegrass, and juniper. They have medium runoff. The erosion hazard for Buster and Pedoli soils is slight to moderate.

Buster-Handy-Xerollic Haplargids association (39).--This association occurs as irregular-shaped areas on gently sloping to moderately sloping old alluvial fans and dissected shale beds. It consists of 50 percent Buster gravelly sandy loam, 2 to 8 percent slopes; 25 percent Handy gravelly clay loam, 4 to 8 percent slopes; and 15 percent Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow, gravelly silty clay loam, 8 to 15 percent slopes. Included are about 10 percent shale outcrops, fine-loamy Xerollic Haplargids and Typic Camborthids.

The Buster soils are in the lowest part of the landscape on broad, smooth fans. The profile for Buster soils is essentially the same as that described for the series. The Handy soils developed in mixed alluvium and are slightly higher in the landscape. They have a profile similar to that described for the series, except the Bt horizon is clay with 7.5YR hue. The Xerollic Haplargids are on ridges in the highest part of the unit and have developed in shale beds. The profile for this soil is similar to that described for the soil family, except the A horizon is thicker and is about 20 percent gravel.

The vegetation on the soils in this unit is essentially the same as that described for the series and soil family. The runoff is medium for the soils in this unit. Erosion hazard for the Buster soils and Xerollic Haplargids is slight to moderate; it is slight for the Handy soils.

for the newly sold.

a profile similar to that described for the centre' except that it contains no triglyceride. The keratin fibrils are no larger in the highest part of the hair but have developed in small bundles.

The profile for hair sold is similar to that described for the sold hair, except that A contains a further 20 per cent keratin.

The examination on the sold hair is essentially the same as that described for the centre and sold hair. The amount of medium for the sold is hair is greater than that described for the centre' except that it contains triglyceride and a keratin fibril association (?).--Hair from

Bylo Series

The Bylo series are nearly level to gently sloping silty soils on narrow flood plains and in broad areas in the lowest part of wide valleys. They formed in mixed alluvium from various volcanic and sedimentary sources. The vegetation consists of winterfat, shadscale, big sagebrush, and squirreltail with a few miscellaneous forbs. The elevation is 5,800 to 6,800 feet where the mean annual precipitation is 8 to 12 inches; mean annual air temperature is 42° to 45° F.; and the frost-free season is about 90 days. They are in Areas 1, 2, 4, 6, 8, 13, and 14.

Typical Bylo profiles have a sequence of three main parts: (1) a very pale brown silt loam surface layer about 4 inches thick; and (2) a pale brown to light yellowish brown silty clay loam about 30 inches thick; and (3) a light yellowish brown silt loam that extends to 60 inches.

Bylo soils are well drained. They have moderately slow permeability. Available water capacity is high. Runoff is slow, and the erosion hazard is moderate. They are subject to occasional flooding and gullying.

Bylo soils are used to provide grazing for livestock and wildlife habitat.

Table Series

The Table Series consists of a small number of tables designed to provide a basic framework for the analysis of data from surveys of households. The tables are intended to be used in conjunction with the Household Survey Manual, Parts A and B, which describe the survey procedures and the concepts and definitions used in the surveys. The tables are designed to be flexible and adaptable to a wide range of survey situations. They are not intended to be used as a substitute for the Household Survey Manual, Parts A and B, but rather as a supplement to it.

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A representative profile of Bylo silt loam, 0 to 4 percent slopes, rangeland, is in Area 2 in White Pine County, Nevada at a site about 0.3 mile south, 0.25 mile west of the northeast corner of section 13, T. 15 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 4 inches, very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; weak thin platy structure; slightly hard, friable; sticky, plastic; few root crowns; many very fine and fine vesicular pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

B2--4 to 10 inches, pale brown (10YR 6/3) silty clay loam, yellowish brown (10YR 5/4) moist; weak very fine subangular blocky structure; soft, very friable, sticky, plastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C1ca--10 to 34 inches, pale brown (10YR 6/3) silty clay loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure parting to weak medium subangular blocky structure; slightly hard, friable, sticky, plastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; few lime films along old root channels and on faces of peds; violently effervescent; moderately alkaline; clear smooth boundary.

C2--34 to 60 inches, light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; soft, friable, sticky, plastic; few very fine and fine roots; common very fine and fine tubular pores; violently effervescent; moderately alkaline.

Thickness of the solum and depth to Cca horizons ranges from 10 to 20 inches. Gravelly horizons are common below 50 inches. The solum is calcareous to noncalcareous. Reaction ranges from mildly alkaline to moderately alkaline. Hue is 10YR, value is 6 to 7 dry and 3 to 5 moist, and chroma is 2 thru 4. The A horizon is massive or has weak or moderate, thin or medium platy structure. Consistence ranges from soft to slightly hard when dry. The structure of the B2 horizon ranges from weak thin platy to weak coarse prismatic, weak medium subangular blocky, or is massive. Texture of the control section is dominantly silty clay loam or heavy silt loam. The Cca horizons contain few to many, fine distinct lime segregations. Structure of the Cca horizons ranges from weak to thin platy, weak coarse prismatic to subangular blocky, or it is massive.

Bylo silt loam, 0 to 2 percent slopes (40).--This soil occurs as irregular-shaped areas on alluvial flood plains. The profile for this soil is essentially the same as that described for the series, except for slope. Included are about 10 percent Belmill, and Buster soils.

The native vegetation consists primarily of shadscale with lesser amounts of squirreltail.

This soil has slow runoff, and the erosion hazard is moderate.

Bylo silt loam, 0 to 4 percent slopes (41).--This soil occurs in long, narrow bands on flood plains and valley-floor positions that receive runoff. Small, shallow channels carry most of the runoff. The profile is the same as that described for the series. In a few places, the soil contains a few pebbles. Included are about 10 percent fine-loamy and coarse-loamy Typic Camborthids and coarse-loamy Typic Torriorthents near channels and in narrow, side drainageways.

The vegetation is mainly winterfat. Big sagebrush grows along channels and other disturbed areas.

The runoff is slow, and the erosion hazard is moderate.

Bylo silty clay loam, 0 to 2 percent slopes (42).--This soil occurs as irregular-shaped areas on alluvial flood plains. The profile for this soil is similar to that described for the series, except for having a silty clay loam surface texture. Included are about 10 percent Belmill, and Buster soils.

The native vegetation on this soil consists primarily of big sagebrush with a few scattered plants of shadscale.

The runoff is slow, and the erosion hazard is moderate.

Bylo-Abgese association (43).--This association occurs as small, narrow bands on valley-floor positions that receive runoff from higher-lying soils. It consists of about 60 percent Bylo silt loam, 0 to 4 percent slopes; and about 30 percent Abgese loam, 0 to 4 percent slopes. Included are about 10 percent fine-loamy Typic Torriorthents along shallow channels, and coarse-loamy Xerollic Haplargids within areas of Abgese soils.

Bylo soils are in slightly depressed position and are easily identified by their light color. The profile for this soil is similar to that described for the series, except the substrata is silty clay loam. Abgese soils are in narrow areas parallel to the direction of water flow. The profile for this soil is similar to that described for the series, except the surface is loam, and the solum is thinner.

The vegetation for the Bylo soils is winterfat and halogeton. It has slow runoff, and the erosion hazard is moderate. The vegetation for Abgese soils is big sagebrush, squirreltail, and Indian ricegrass. It has medium runoff, and the erosion hazard is moderate.

Bylo-Ramshorn association (44).--This association occurs in long, narrow bands on flood plains. It consists of 70 percent Bylo gravelly fine sandy loam, 0 to 2 percent slopes; and 25 percent Ramshorn gravelly sandy loam, 8 to 15 percent slopes. Included are about 5 percent coarse-loamy and fine-loamy Typic Torriorthents that are mainly along channels.

The Bylo soil covers most of the nearly level part of the flood plain. A small channel carries most of the runoff, but during periods of heavy runoff this soil is flooded. The profile for this soil is similar to that described for the series, except it is calcareous throughout, has gravelly fine sandy loam surface, and has a lower reaction in the lower part of the profile. Ramshorn soil occurs at the mouths of small, side drainageways in narrow footslope positions near sharply rising old alluvial fans of Nuc soils. Water passes over Ramshorn soil only when the side drainageways are flooding which is very seldom. The profile for Ramshorn soil is similar to that described for the series, except the surface is gravelly sandy loam, there are no cobbles in the profile, and the gravel is more uniform in size.

The vegetation on the Bylo soil consists of winterfat, and halogeton. It has slow runoff, and the erosion hazard is moderate. Vegetation on the Ramshorn soil is winterfat, rabbitbrush, halogeton, and squirreltail. The runoff is medium, and the erosion hazard is slight to moderate.

Calciorthidic Haploxerolls, loamy-skeletal, mixed, frigid

The soils in the area representing this family are gently sloping to moderately sloping. They formed on narrow flood plains, alluvial fans and terraces in mixed alluvium from volcanic flow rock tuffs and limestone. The vegetation is big sagebrush, rabbitbrush, squirreltail, juniper, pinyon pine, desert peach, and phlox. They are at elevations of 6,400 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 42° to 44° F.; and the frost-free season is 90 to 100 days. They are in Areas 17 and 18.

Typical soil family profiles have a sequence of two main parts: (1) a grayish brown to brown loam surface layer about 14 inches thick; and (2) a pale brown very gravelly sandy loam that extends to at least 60 inches.

These soils are well drained. They have moderately rapid permeability. Available water capacity is low. The runoff is slow to medium, and the erosion hazard is slight to moderate. They are subject to occasional flooding.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Calciorthidic Haploxerolls, loamy-skeletal, mixed, frigid, gravelly loam, 2 to 8 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 1,000 feet south of the north quarter of section 10, T. 7 N., R. 59 E., or 1.6 miles south on the Perish Springs Trail from its junction with the Currant-Lund dirt road.

(Colors are for dry soil unless otherwise noted).

A11--0 to 3 inches, grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky, slightly plastic; few fine medium and coarse roots; few fine vesicular pores; about 15 percent by volume gravel; moderately alkaline; abrupt smooth boundary.

A12--3 to 14 inches, brown (10YR 5/3) heavy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky, slightly plastic; common fine, medium and coarse roots; common fine tubular and interstitial pores; about 10 percent by volume gravel; violently effervescent; moderately alkaline; clear wavy boundary.

IIClca--14 to 60 inches, pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, nonplastic; few fine, medium and coarse roots; common fine tubular and interstitial pores; about 70 percent by volume fine limestone and tuff gravel; gravel is partly lime coated, mainly on the bottom; violently effervescent; moderately alkaline; gradual wavy boundary.

The solum thickness and depth to the Cca horizon is 12 to 24 inches. The mean annual soil temperature is 44° to 46° F. Value is 5 thru 7 dry and 3 thru 5 moist, and chroma of 2 or 3. The A horizons are 1 to 2 units of value darker, moist or dry than the C horizons. The control section is stratified with layers of fine limestone and tuff gravel. Thin strata of coarse sand to loam is in many pedons. The lime coating on the gravel decreases with depth. Some pedons have very slight cementation in the Clca horizon.

This soil family has been mapped only as a component soil in the Fanu-Calciorthids Haploxerolls association (49).

the Fenn-Christoffel Mayfloxerille association (94).

Calciorthidic Haploxerolls, fine, montmorillonitic, frigid

The soils in the area representing this family are nearly level to moderately sloping. They formed on narrow flood plains, alluvial fans and terraces in alluvium that has been derived from tuffs, limestone, shale, and other sedimentary rock. The vegetation consists of pinyon pine, big sagebrush, juniper, desert peach, rabbitbrush, Great Basin wildrye, squirreltail, and Indian ricegrass. They are at elevations of 6,500 to 7,000 feet. The mean annual precipitation is 10 to 12 inches; mean annual air temperature is 42° to 44° F.; and the frost-free season is about 90 days. These soils occur mainly southeast of Currant near Big Spring.

Typical soil family profiles have a sequence of three main parts: (1) a surface layer of dark grayish brown soft clay loam about 2 inches thick; (2) a dark grayish brown clay loam about 12 inches thick; and (3) a dark grayish brown to brown slightly hard clay loam that extends to 60 inches.

These soils are well drained. They have moderately slow permeability. Available water capacity is high. They receive runoff from surrounding higher land, but are flooded for only very short periods. Shallow channels carry most of the runoff. Runoff is medium, and the erosion hazard is slight to moderate by water.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Calciorthidic Haploxerolls, fine, montmorillonitic, frigid, clay loam, 4 to 8 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 0.35 mile south, 0.5 mile west of the northeast corner of section 19, T. 8 N., R. 59 E., or 1.6 miles north-northeast of Big Spring.

(Colors are for dry soil unless otherwise noted).

A11--0 to 2 inches, dark grayish brown (10YR 4/2) clay loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, sticky, plastic; few very fine and fine roots; common very fine interstitial pores; few pebbles of chert, limestone, shale and tuff; noneffervescent; moderately alkaline; abrupt smooth boundary.

A12--2 to 8 inches, dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate very fine subangular blocky structure; soft, friable, sticky, plastic; common fine, medium and coarse roots; common fine interstitial and tubular pores; few pebbles, some have a lime coating on the lower side; strongly effervescent; moderately alkaline; clear smooth boundary.

horse; few happier or cheer, lineament, apple and fall;
monolithicengagement; moderately alkaline; sphere smooth pontoon.
to 3 throne, dark breaker promo (1078 4\5) city loan,
very dark breaker promo (1078 3\5) motel moderate very
fine engagement plenty structure; sort, triple, attack,
hydrate; common line, medium bus coarse room; common
fine intermittent and carpet horse; few happier, game
have a line constant on the lower side) strongly differ-
ence! moderately alkaline; clear smooth pontoon.

A representative protein of Calcolithic Mediterranean time,
monolithicengagement, triple, city loan, 4 to 3 percent globes, remem-
ber, is in very common; observe it as unpunctuated area at a site
about 0.35 mile south, 0.2 mile west of the northeast corner of
section 15, T. 3 N., R. 2E W., on a little north-northeast of
mile marker.

(Colors are not for via Lion unless otherwise noted).

LIA--0 to 3 throne, dark breaker promo (1078 4\5) city loan,
very dark breaker promo (1078 3\5) motel week fine breaker
actor; sort, very triple, actor, hydrate; few
intermittent and carpet horse; few happier, game
fine intermittent and carpet horse; few happier, game
hydrate; common fine, medium bus coarse room; common
fine engagement plenty structure; sort, triple, attack,
very dark breaker promo (1078 3\5) motel moderate very

B21--8 to 14 inches, dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine, medium and coarse roots; common fine tubular pores; few lime-coated pebbles; few films and very fine masses of lime; violently effervescent; moderately alkaline; abrupt wavy boundary.

B22ca--14 to 24 inches, dark grayish brown (10YR 4/2) clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky, very plastic; few fine and medium roots; common fine tubular pores; few lime-coated pebbles tend to be in pockets; few krotovinas; common films and a few fine soft masses of lime; violently effervescent; moderately alkaline; clear smooth boundary.

B23ca--24 to 36 inches, dark grayish brown (10YR 4/2) clay loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to weak medium subangular blocky structure; slightly hard, friable, sticky, plastic; few fine and medium roots; common fine tubular pores; few lime-coated pebbles; few films of lime; violently effervescent; moderately alkaline; clear smooth boundary.

C1ca--36 to 60 inches, brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, sticky, very plastic; few fine and medium roots; common fine tubular pores; very few lime-coated pebbles; few krotovinas; common films of lime; violently effervescent; moderately alkaline.

Solum thickness and depth to C1ca ranges from 30 to 40 inches. Gravelly and cobbly phases occur. The control section averages clay loam to clay in texture with 35 to 45 percent clay. The profile has hue of 2.5Y or 10YR, value of 4 thru 6, and chroma of 2 or 3. The A1 horizon ranges from noneffervescent to violently effervescent. Reaction is moderate to strongly alkaline. The B2 and C horizons have segregated lime but not enough for a calcic horizon.

This soil family has been mapped only as a component soil in the Ansping-Calciorthidic Haploxerolls association (29).

Colona Series

These nearly level soils have formed in lacustrine silty clay. The vegetation is mainly winterfat, and halogeton with some rabbitbrush and big sagebrush along channels. They are at elevations of 5,800 to 6,200 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 45° to 47° F; and the frost-free season is 100 to 120 days. They are in Area 13.

Typical Colona profiles have a sequence of two main parts: (1) a light yellowish brown silty clay loam layer about 13 inches thick; and (2) a light yellowish brown silty clay that extends to at least 60 inches.

These soils are well drained. They have slow permeability. Available water capacity is high. The runoff is slow, and the erosion hazard is moderate.

They are used for livestock grazing and wildlife habitat.

A representative profile of Colona silty clay loam, 0 to 2 percent slopes, rangeland, is in Nye County, Nevada at a site about 2,000 feet northeast of the southwest corner of section 27, T. 10 N., R. 53 E., or 0.75 mile west of Sand Spring Draw along trail.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, light yellowish brown (2.5Y 6/4) silty clay loam, olive brown (2.5Y 4/4) moist; weak very fine granular structure; soft, very friable, sticky, plastic; few fine medium and coarse roots; few interstitial pores; about 5 percent by volume fine gravel; moderately alkaline; clear smooth boundary.

B21--3 to 13 inches, light yellowish brown (2.5Y 6/4) silty clay loam, olive brown (2.5Y 4/4) moist; moderate fine and medium blocky structure with some medium and coarse prismatic structure; slightly hard, friable, sticky, plastic; common fine medium and coarse roots; common fine and very fine interstitial and tubular pores; about 5 percent by volume fine gravel; noneffervescent to effervescent; strongly alkaline; clear smooth boundary.

B22ca--13 to 30 inches, light yellowish brown (2.5Y 6/4) silty clay, olive brown (2.5Y 4/4) moist; moderate fine and medium blocky structure with some medium and coarse prismatic structure; hard, firm, very sticky, very plastic; few fine and medium roots; few fine interstitial and tubular pores; about 5 percent by volume fine gravel; very few lime films; effervescent; strongly alkaline; clear smooth boundary.

Cca--30 to 60 inches, light yellowish brown (2.5Y 6/4) silty clay, light olive brown (2.5Y 4/4) moist; fine and medium blocky structure with some medium and coarse prismatic structure; hard, firm, very sticky, very plastic; few fine and very fine roots; few fine interstitial and tubular pores; few lime streaks; few very fine iron and manganese concretions; strongly effervescent; moderately alkaline.

When dry, cracks 1/4 to 1/2 inch wide extend from the lower part of the A horizon thru the B2 horizon. Color of the profile has hue of 10YR to 2.5Y, value is 6, and chroma is 3 or 4. The texture of the A horizon ranges from heavy silty clay loam to light clay. Textures of the B2 horizon range from heavy silty clay loam to silty clay.

Colona silty clay loam, 0 to 2 percent slopes (45).--This soil occurs in large, rounded to oblong areas. They are in or near the lowest part of wide valleys and receive water from higher-lying soils. The profile is the same as that described for the series. Included are about 5 percent fine-loamy Typic Torriorthents along some drainageways, and fine-loamy Typic Haplargids on a few, old alluvial fans.

Colona soil has slow runoff, and the erosion hazard is moderate.

Drewing Series

The Drewing series are moderately sloping to rolling gravelly soils that are shallow over cemented pans. They have formed in strongly dissected, old alluvial fans where the materials have been derived from tuffs. The vegetation consists of pinyon pine, black sagebrush, Indian ricegrass, and squirreltail. They are at elevations of 6,500 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is about 90 days. Drewing soils occur southeast of Currant near Andrew Spring.

Typical Drewing profiles have a sequence of three main parts: (1) a surface layer of brown gravelly loam about 3 inches thick; (2) a reddish brown to light reddish brown gravelly clay loam, gravelly sandy clay loam and very gravelly clay loam layer about 8 inches thick; and (3) a hardpan that consists of alternate thin, strongly and weakly cemented gravelly layers which extend to 60 inches.

Drewing soils are well drained. The permeability is moderately slow to the hardpan, then very slow. Available water capacity is low. Runoff is medium, and the erosion hazard is moderate.

The Drewing soils are used for livestock grazing, woodland, and wildlife habitat.

A representative profile of Drewing gravelly loam, 4 to 8 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 0.15 mile south, 0.9 mile west of the northeast corner of section 6, T. 8 N., R. 58 E., or 1.1 mile east-northeast of Andrew Spring.

(Colors are for dry soil unless otherwise noted).

A11--0 to 3 inches, brown (7.5YR 5/3) gravelly loam, dark brown (7.5YR 3/3) moist; weak medium platy structure; soft, friable, slightly sticky, slightly plastic; very few fine roots; many very fine and fine vesicular pores; about 35 percent by volume pebbles; noneffervescent; moderately alkaline; abrupt smooth boundary.

B21t--3 to 6 inches; reddish brown (5YR 5/3) gravelly clay loam, dark reddish brown (5YR 3/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine, medium and coarse roots; common fine tubular pores; about 20 percent by volume pebbles; few patchy clay films; noneffervescent; moderately alkaline; abrupt smooth boundary.

B22t--6 to 8 inches, light reddish brown (5YR 6/3) gravelly sandy clay loam, reddish brown (5YR 4/3) moist; moderate very fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine, medium and coarse roots; common fine tubular pores; about 45 percent by volume pebbles; few patchy clay films; noneffervescent; moderately alkaline; clear wavy boundary.

C1ca--8 to 11 inches, pink (7.5YR 7/4) very gravelly clay loam, brown (7.5YR 5/4) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common fine, medium and coarse roots; common fine tubular pores; about 65 percent by volume pebbles; common fine fragments, films and soft masses of lime; violently effervescent; moderately alkaline; abrupt wavy boundary.

C2sica--11 to 18 inches, very pale brown (10YR 7/3) weakly cemented pan; massive; the upper 3 inches is hard and platy; plates are about 1 inch thick; the lower part is not platy; hard, firm; few roots; estimate 60 percent by volume lime-coated and cemented pebbles; violently effervescent; moderately alkaline; abrupt wavy boundary.

C3sicam--18 to 46 inches, series of cemented pans 2 to 4 inches thick, gravelly layers 3 to 6 inches thick; few roots in gravelly layers; less lime than in the above horizon; violently effervescent; moderately alkaline; clear wavy boundary.

C4si--46 to 60 inches, weakly cemented fine gravel; mass is non-effervescent, except where few films of lime occur on pebbles in upper part; very few fine roots.

The mollic epipedon includes the A horizon and the upper part of the Bt horizon. The lower boundary of the Bt horizon is at 6 to 10 inches. The upper boundary of the hardpan is at 10 to 20 inches. Typically, there is a thin friable Cca horizon above the hardpan, but in many pedons the Bt horizon rests directly on the hardpan. Texture of the control section ranges from gravelly loam to clay loam and averages 25 to 35 percent clay. The calcic horizon includes the C1ca horizon and upper part of the hardpan. The A horizon has hue of 7.5YR to 10YR, value is 3 thru 5, and chroma is 2 or 3. The Bt horizon has hue of 7.5YR to 5YR, values of 4 to 6, and chroma is 3 or 4. The C horizon is stratified and various layers are cemented with lime and silica.

The Drewing series have been mapped as a component soil in the Loza-Drewing association (59), and in the Xerertic-Haplargids association (77).

Durixerollic Calciorthids, loamy-skeletal, mixed, frigid

The soils in the area representing this family are gently sloping to moderately sloping. They have formed on old alluvial fans from sedimentary rock sources. The vegetation consists of black sagebrush, Indian ricegrass, rabbitbrush, winterfat, and squirreltail. They are at elevations of 6,240 to 6,600 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 42° to 44° F.; and the frost-free season is 90 to 100 days. They are in Area 1.

Typical soil family profiles have a sequence of three main parts: (1) a surface layer of light gray gravelly loam about 4 inches thick; (2) a weakly developed layer of pale brown to very pale brown gravelly loam to very gravelly sandy loam about 12 inches thick; and (3) a very pale brown to pale brown very gravelly sandy loam and very gravelly loamy sand that extends to 56 inches.

These soils are well drained. They have moderately rapid permeability. Available water capacity is low. The runoff is medium, and the erosion hazard is slight to moderate.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Durixerollic Calciorthids, loamy-skeletal, mixed, frigid, gravelly loam, 2 to 8 percent slopes, rangeland, is in White Pine County, Nevada at a site approximately 300 feet east of the southwest corner of section 6, T. 16 N., R. 57 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 4 inches, light gray (10YR 7/2) gravelly loam, brown (10YR 4/3) moist; weak very fine platy structure; very soft, very friable, slightly sticky, slightly plastic; root crowns, and common very fine and micro roots; many very fine and fine interstitial, and few very fine vesicular pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

B21--4 to 10 inches, pale brown (10YR 6/3) gravelly heavy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many very fine and fine roots; many very fine and fine interstitial, and few very fine tubular pores; very few very thin clay films on gravel; 30 percent gravel; strongly effervescent; strongly alkaline; abrupt wavy boundary.

A representative profile of Dorfkeroltic calcotrophs, lowem-
ephelectal, mixed, tirigid, vesvillv loam, 5 to 8 percent slopes,
rmmelgbod, is an Whfte Pine County, Nevada at a site approximately
200 feet east of the southwest corner of section 8, T. 16 N.,
R. 52 E.

(Colors are for dry soil unless otherwise noted).

0--14 to 4 inches, light tan (10YR 6\3) gravelly loam, brown (10YR 5\3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many very fine and fine and few medium roots; many very fine interstitial, and few very fine tubular pores; very few thin clay films on gravel; 30

14--24 to 30 inches, pale brown (10YR 6\3) gravelly loam, brown (10YR 5\3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many very fine and fine and few medium roots; many very fine interstitial, and few very fine tubular pores; strongly effervescent; strongly alkaline; sprung very pondgeta.

smooth pondgeta.

BSL---4 to 10 inches. bale prown (10YR 6\3) gravelly mevay loam,
prown (10YR 5\3) moist; weak fine subangular blocky
structure; soft, friable, slightly sticky, slightly
fluvatic; many very fine and fine roots; many very
fine and fine interstitial, and few very fine tubular
pores; very few thin clay films on gravel; 30

pores; strongly effervescent; strongly
alkaline; sprung very pondgeta.

B22--10 to 16 inches, very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, friable, nonsticky, nonplastic; common very fine and fine, and few micro roots; many very fine and fine interstitial pores; very few very thin clay films on gravel; 60 percent gravel; strongly effervescent; strongly alkaline; abrupt wavy boundary.

C1sica--16 to 30 inches, very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, friable, nonsticky, nonplastic; few very fine and fine roots; common very fine, fine and medium interstitial pores; 15 to 25 percent hard and firm durinodes; 45 percent gravel; strongly effervescent; very strongly alkaline; abrupt wavy boundary.

C2sica--30 to 36 inches, pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, friable, nonsticky, nonplastic; no roots; common very fine, fine, and medium interstitial pores; 45 percent gravel; strongly effervescent; very strongly alkaline; abrupt smooth boundary.

C3sica--36 to 56 inches, pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; single grained; loose, nonsticky, nonplastic; common medium and coarse interstitial pores; 80 percent gravel; strongly effervesent; very strongly alkaline.

Thickness of the solum ranges from 10 to 21 inches. These soils are usually dry. The A1 horizon includes hue of 10YR, value of 6 to 7 dry, 4 or 6 moist, and chroma of 2 or 3. It has weak very fine platy structure or is massive. Consistence ranges from soft to slightly hard when dry. Structure of the B2 horizons is weak fine subangular blocky or is massive. Coarse fragments range from 37 to 50 percent. The Csica horizons consist of very gravelly sandy loam which may be interstratified with very gravelly loamy sand material. Gravel content ranges from 40 to 80 percent.

This soil family has been mapped only as a component soil in the Xerollic Durorthids-Durixerollic Calciorthids association (83).

Durixerollic Calciorthids, loamy-skeletal, mixed, mesic

The soils in this area representing the family are gently sloping to moderately sloping. They formed on old alluvial fans from volcanic flow rock, tuffs, limestone and shale. In Area 13, the dominant parent material is from volcanic rock, and in Areas 8 and 9, it is from limestone. Much of the surface is barren of vegetation. There is scattered black sagebrush, rabbitbrush, and halogeton. The elevation is 6,000 to 6,600 feet where the mean annual precipitation is about 8 inches; mean annual air temperature is 44° to 46° F.; and the frost-free season is 100 to 120 days. These soils are in Areas 8, 9, and 13.

The typical soil family profile has a sequence of two main parts: (1) a very pale brown gravelly loam about 20 inches thick; and (2) a pale brown very gravelly sandy loam that is high in lime and weakly cemented with silica extending to 60 inches.

These soils are well drained. They have moderately slow permeability. Available water capacity is low. The runoff is medium, and the erosion hazard is moderate.

A representative profile of Durixerollic Calciorthids, loamy-skeletal, mixed, mesic, gravelly sandy clay loam, 2 to 8 percent slopes, rangeland, is in Nye County, Nevada at a site near the center of section 18, T. 11 N., R. 54 E.

(Colors are for dry soil unless otherwise noted).

A11--0 to 3 inches, pale brown (10YR 6/3) gravelly sandy clay loam, dark brown (10YR 3/3) moist; weak fine platy structure; soft, very friable, sticky, plastic; few medium and coarse roots; common fine vesicular pores; about 30 percent by volume fine, medium and coarse gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

C1sica--3 to 12 inches, very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky, nonplastic; common fine, medium and coarse roots; common fine interstitial pores; about 60 percent by volume gravel, 10 percent cobbles; gravel and cobbles heavily lime coated on lower sides; violently effervescent; moderately alkaline; abrupt wavy boundary.

C2sica--12 to 20 inches, very pale brown (10YR 8/2) very gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky, nonplastic; few fine medium and coarse roots; common fine interstitial pores; 60 percent gravel; few very hard pockets; fractured laminar caps; violently effervescent; moderately alkaline; abrupt wavy boundary.

C3sica--20 to 60 inches, pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; hard, firm, nonsticky, nonplastic; very few very fine roots; common fine interstitial pores; 60 percent gravel; violently effervescent; moderately alkaline.

Texture of the A horizon ranges from heavy gravelly sandy loam to gravelly sandy clay loam. Hue is 10YR, value is 6, and chroma is 3 or 4. The C horizons are a series of weak pans and layers of very gravelly sandy loam. Hue is 10YR, value is 6 thru 8, and chroma is 3.

Durixerollic Calciorthids-Xerollic Calciorthids association (46).--These soils occur as irregular-shaped areas on long, gently sloping to moderately sloping alluvial fans. It consists of about 55 percent Durixerollic Calciorthids loamy-skeletal, mixed, mesic, gravelly sandy clay loam, 2 to 8 percent slopes; and about 40 percent Xerollic Calciorthids, loamy-skeletal, mixed, mesic, gravelly sandy loam, 2 to 8 percent slopes. Included are about 5 percent Xerollic Durorthids.

The Durixerollic Calciorthids are higher on the slope. The profile for this soil is the same as that described for the soil family. The Xerollic Calciorthids are lower on the slope and have a higher percentage of gravel. The profile for this soil is similar to that described for the soil family, except it has a thicker solum.

The runoff for the component soils in this unit is medium. The erosion hazard for the Durixerollic Calciorthids is moderate and for the Xerollic Calciorthids it is slight to moderate.

to state described for the soil family, except it has a finer soil
texture. The A horizon is dark yellowish-brown fine sandy loam, 0
to 8 inches thick. The B horizon is yellowish-brown fine sandy clay
loam, 8 to 24 inches thick. The C horizon is yellowish-brown fine
sandy loam, 24 to 36 inches or more thick.

The Cartwright Calcareous Alluvial Soils are found on the
terraces of the Brazos River. The profile for this soil is
similar to Cartwright fine sandy loam, except it has a finer soil
texture. The Cartwright Calcareous Alluvial Soils are found on the
terraces of the Brazos River. The profile for this soil is
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terraces of the Brazos River. The profile for this soil is
similar to Cartwright fine sandy loam, except it has a finer soil
texture.

Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid

The soils in the area representing this family are smooth and gently sloping. They are on narrow flood plains that formed in alluvium mainly from limestone. The vegetation consists of big sagebrush, winterfat, rabbitbrush, Indian ricegrass, and shadscale. They are at elevations of 6,000 to 6,500 feet where the mean annual precipitation is about 8 inches; mean annual air temperature is 42° to 44° F.; and the frost-free season is about 90 days. They occur mainly east of Currant near Manzone Well.

A typical profile for this soil family has a sequence of two main parts: (1) a light brownish gray loam surface layer that contains about 10 percent gravel about 3 inches thick; and (2) a very pale brown to pale brown stratified loam, very gravelly loam, and gravelly sandy loam that extends to 65 inches.

These soils are well drained. They have moderate permeability. Available water capacity is moderate. The runoff is medium, and the erosion hazard is slight to moderate. They are subject to occasional flooding.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid, loam, 2 to 4 percent slopes,rangeland, is in Nye County, Nevada at a site about 4,760 feet south of the northeast corner of section 9, T. 10 N., R. 59 E., or about 0.9 mile northeast of Manzone Well.

(Colors are for dry soil unless otherwise noted).

A11--0 to 3 inches, light brownish gray (10YR 6/2) loam, brown (10YR 4/3) moist; weak fine and medium platy structure; slightly hard, very friable, nonsticky, nonplastic; few fine roots; common fine and very fine vesicular pores; surface is about 20 percent covered with fine limestone pebbles; soil mass is about 10 percent by volume fine limestone pebbles; violently effervescent; moderately alkaline; abrupt smooth boundary.

A12--3 to 5 inches, pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky, slightly plastic; common very fine, fine and medium roots; many very fine and fine interstitial pores; about 10 percent by volume limestone pebbles; violently effervescent; moderately alkaline; abrupt smooth boundary.

C1--5 to 10 inches, pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak fine subangular blocky and fine granular structure; slightly hard, very friable, slightly sticky, slightly plastic; common very fine, fine and medium roots; common very fine and fine tubular pores; about 10 percent by volume limestone pebbles; violently effervescent; moderately alkaline; abrupt wavy boundary.

IIC2--10 to 19 inches, pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, nonplastic; common very fine, fine and medium roots; common very fine tubular pores; about 60 percent by volume limestone pebbles; few cobbles, lime coating on the lower side of pebbles and cobbles; violently effervescent; moderately alkaline; abrupt wavy boundary.

IIIC3sica--19 to 42 inches, pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky, slightly plastic; few fine and medium roots mostly in pockets of softer soil; common very fine tubular pores; about 30 percent by volume medium and large durinodes; about 10 percent by volume limestone pebbles, lime-coated on lower side; contains strata of loam and silt loam, contains very gravelly strata; few limestone cobbles; few pockets are hard when dry; violently effervescent; moderately alkaline.

IIIC4--42 to 65 inches, very pale brown (10YR 7/3) gravelly fine sandy loam, brown (10YR 5/3) moist; massive; soft, friable, nonsticky, nonplastic; very few very fine roots; common very fine tubular pores; about 15 percent by volume limestone pebbles; lime-coated on the lower side; contains strata of loam and silt loam, and very gravelly strata, few limestone cobbles; few pockets are hard when dry; violently effervescent; moderately alkaline.

Any horizon may contain more than 35 percent by volume limestone pebbles and cobbles. Hard and firm durinodes occupy 10 to 40 percent by volume of one or more of the C horizons. The texture of all horizons are dominantly loam, sandy clay loam or fine sandy loam with 8 to 16 percent clay. Thin strata of silt loam, silty clay loam or clay loam occur in many pedons. The A horizon has hue of 10YR or 2.5Y, value is 6, and chroma is 2 or 3. The C horizons have hue of 10YR, value is 6 to 7, and chroma is 2 or 3.

Durorthidic Xeric Torriorthents-Ramshorn association (47).---This association occurs as irregular-shaped areas on smooth, gently sloping flood plains that formed in loamy and gravelly alluvium mainly from limestone, but include small amounts from other sedimentary and volcanic rock. Small, meandering channels carry off most of the runoff. It consists of about 60 percent Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid, loam, 2 to 4 percent slopes; and about 30 percent Ramshorn very gravelly loam, 2 to 8 percent slopes. Included are about 10 percent other soils that occur in wider and less sloping parts of the flood plain, and Nuc soils within the steeper side drainageways and along the edges of mapped areas. Cobbles or limestone rubble occur in a few places.

The Durorthidic Xeric Torriorthents occupy the less sloping, less gravelly and wider parts of the flood plains. Ramshorn soil is generally more sloping, and occur near channels, on gravelly fans and in narrow, side drainageways. The profiles for these soils are the same as those described for the series and soil family.

The runoff for the component soils in this unit is medium, and the erosion hazard is slight to moderate.

Fanu Series

The Fanu series are gently sloping to moderately sloping soils formed on narrow flood plains in alluvium from limestone, shale, tuffs, and volcanic flow rock. The vegetation is dominantly big sagebrush with lesser amount of rabbitbrush, Great Basin wildrye, squirreltail, threeawn, and pinyon. They are at elevations of 6,400 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 42° to 44° F.; and the frost-free season is 90 to 100 days. They are in Areas 16, 17, and 18, southeast of Currant.

Typical Fanu soil profiles have a sequence of three main parts: (1) a surface layer of grayish brown to brown loam about 9 inches thick; (2) a brown clay loam layer about 11 inches thick; and (3) a brown to pale brown stratified gravelly loam and loam that extends to 64 inches.

Fanu soils are well drained. They have moderate permeability. Available water capacity is high. Runoff is medium, and the erosion hazard is slight to moderate. They are subject to occasional flooding.

Fanu soils are used for livestock grazing and wildlife habitat.

A representative profile of Fanu loam, 2 to 8 percent slopes, rangeland, is in Nye County, Nevada at a site about 0.5 mile north of Albert Spring, or 0.1 mile west and 0.3 mile south of the unsurveyed northeast corner of section 5, T. 8 N., R. 59 E.

(Colors are for dry soil unless otherwise noted).

A11--0 to 2 inches, grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine platy structure; soft, friable, slightly sticky, slightly plastic; very few fine thru coarse roots; many very fine and fine vesicular pores; 2 percent gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

A12--2 to 9 inches, brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many very fine thru coarse roots; common fine tubular and interstitial pores; 2 percent gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

B2--9 to 20 inches, brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine thru coarse roots; common fine tubular pores; 5 percent gravel; few lime films; violently effervescent; moderately alkaline; abrupt wavy boundary.

IIC1ca--20 to 28 inches, brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; massive; soft, friable, sticky, plastic; common fine thru coarse roots; common fine tubular and interstitial pores; 30 percent gravel; gravel are partly lime coated; violently effervescent; moderately alkaline; abrupt wavy boundary.

IIIC2ca--28 to 40 inches, pale brown (10YR 6/3) loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, slightly sticky, slightly plastic; few fine thru coarse roots; few fine tubular and interstitial pores; 1 percent gravel; few rounded pockets of silty clay loam, few lime films; violently effervescent; moderately alkaline; clear wavy boundary.

IIIC3--40 to 64 inches, pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; very few fine thru coarse roots; few fine tubular and interstitial pores; few lime films; moderately alkaline; contains few thin sandy loam strata.

Thickness of the solum to the Cca horizon is 14 to 26 inches. The 10 to 40 inch control section averages 18 to 25 percent clay although any horizon may have less than 18 or more than 25 percent clay. This soil has hue of 10YR, value of 5 or 6, and chroma of 2 or 3.

Fanu loam, 2 to 8 percent slopes (48).--This soil occurs as long, narrow bands on flood plains. The profile is the same as that described for the series. Included are about 15 percent loamy-skeletal Calciorthidic Haploxerolls in the mouth of small drainage-ways and along channels.

This soil has medium runoff, and the erosion hazard is slight to moderate.

Fanu-Calciorthidic Haploxerolls association (49).--This soil occurs in long, narrow bands on gently sloping to moderately sloping flood plains. It consists of 50 percent Fanu gravelly fine sandy loam, 2 to 8 percent slopes; and 45 percent Calciorthidic Haploxerolls, loamy-skeletal, mixed, frigid, gravelly loam, 2 to 8 percent slopes. Included are about 5 percent Ramshorn soils which lack a mollic epipedon.

The Fanu soils are on broader parts of the flood plain. The Calciorthidic Haploxerolls are along channels, in mouths of narrow, side drainageways, and in the more narrow parts of the flood plain. The profiles are similar to that described for the series and soil family, except the surface texture of the Fanu soil is gravelly fine sandy loam.

The component soils in this unit have slow to medium runoff, and the erosion hazard is slight to moderate.

Handy Series*

The Handy series are moderately sloping soils that formed in old alluvial fans from volcanic flow rock, tuffs, and shale. The vegetation is big sagebrush, thickspike wheatgrass, rabbitbrush, bud sagebrush, Indian ricegrass, squirreltail, spiny hopsage, shadscale, and juniper. They are at elevations of 6,400 to 6,800 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 44° to 45° F.; and the frost-free season is 90 to 100 days. These soils are in Areas 3 and 4.

Typical Handy soil profiles have a sequence of three main parts: (1) a pale brown surface layer of gravelly clay loam about 3 inches thick; (2) a light yellowish brown to yellowish brown clay to clay loam layer about 19 inches thick; and (3) a very pale brown sandy loam to very gravelly and cobbly sandy loam that extends to 60 inches.

Handy soils are well drained. They have moderately slow permeability. Available water capacity is moderate. Runoff is medium, and the erosion hazard is slight to moderate.

Handy soils are used for livestock grazing and wildlife habitat.

*Taxadjunct to the series - These soils have a thinner sola than the Handy series and are moderately alkaline in the upper part of the profile.

A representative profile of Handy gravelly clay loam, 2 to 8 percent slopes, rangeland, is in White Pine County, Nevada at a site on the extreme eastern side of Area 4, about 500 feet south of State Highway 20, 0.55 mile west, 0.1 miles south of the northeast corner of section 5, T. 10 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 3/3) moist; weak fine platy structure; slightly hard, friable, slightly sticky, slightly plastic; common root crowns; many very fine and fine vesicular pores; 15 percent gravel, 3 percent cobbles; moderately alkaline; clear wavy boundary.

B21t--3 to 12 inches, yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine blocky structure; slightly hard, firm, sticky, plastic; many very fine to medium roots; common very fine and fine tubular and interstitial pores; 10 percent gravel, 3 percent cobbles; patchy clay films; moderately alkaline; clear wavy boundary.

B22tca--12 to 22 inches, light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; moderate fine blocky structure; hard, firm, sticky, plastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; 10 percent gravel, 3 percent cobbles; patchy clay films; many lime films; few very fine soft masses of lime; inside of some peds is non-effervescent; strongly effervescent; moderately alkaline; clear wavy boundary.

C1ca--22 to 34 inches, very pale brown (10YR 7/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky, nonplastic; few very fine roots; common very fine and fine tubular and interstitial pores; 20 percent gravel, 5 percent cobbles; many fine masses of lime; violently effervescent; moderately alkaline; abrupt wavy boundary.

IIC2ca--34 to 60 inches, very pale brown (10YR 7/3) very gravelly and cobbly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky, nonplastic; very few very fine roots; common very fine and fine tubular and interstitial pores; 40 percent gravel, 20 percent cobbles; many fine masses of lime; violently effervescent; moderately alkaline.

The solum thickness and depth to the calcic horizon is 20 to 40 inches. The transition to very gravelly textures is more than 5 inches. The A horizon has hue of 10YR, value of 6 or 7, and chroma of 2 thru 4. The texture is gravelly clay loam or loam. The Bt horizon has hue of 7.5YR or 10YR, value of 4 thru 6, and chroma of 3 or 4. The texture is clay loam to clay with 36 to 45 percent clay. The C1ca horizon has hue of 10YR, value of 6 thru 8, and chroma of 2 thru 4. The IIC2ca horizon has hue of 10YR, value of 5 thru 8, and chroma of 2 thru 6. The percent by volume of gravel is 30 to 60 and of cobbles is 15 to 30. In many pedons this horizon is stratified with very gravelly loamy sand.

The Handy series have been mapped only as component soils in the Buster-Handy association (37)., and Buster-Xerollic Haplargids (39).

Haploxerollic Durargids, fine, montmorillonitic, frigid

The soils in the area representing this family are gently sloping. They formed in old alluvial fans from mixed sedimentary rock. The vegetation consists of big sagebrush, squirreltail, needle-and-thread grass, desert needlegrass, Indian ricegrass, and miscellaneous forbs. They occur at elevations of 6,400 to 6,800 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is 90 to 100 days.

Typical soil family profiles have a sequence of four main parts: (1) a pale brown gravelly loam surface layer about 2 inches thick; (2) a pale brown to yellowish brown clay layer about 14 inches thick; (3) a very pale brown and white clay loam about 23 inches thick; and (4) a very pale brown strongly cemented hardpan extending to 50 inches.

These soils are well drained. They are slowly permeable. Available water capacity is moderate. The runoff is medium, and the erosion hazard is slight to moderate.

These soils are used to provide grazing for livestock and wildlife.

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These soils are used for livestock and wildlife.

A representative profile of Haploxerollic Durargids, fine, montmorillonitic, frigid, gravelly loam, 2 to 4 percent slopes, rangeland, is in White Pine County, Nevada at a site about 2,400 feet east and 1,200 feet north of the southwest corner of sec. 13, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to to 2 inches, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; massive; very soft, very friable, slightly sticky, slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; neutral; abrupt smooth boundary.

B1t--2 to 4 inches, pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; moderate very fine granular structure; very soft, very friable, sticky, plastic; many very fine roots; many very fine and fine interstitial pores; few thin clay films as bridges; neutral; abrupt smooth boundary.

B21t--4 to 11 inches, pale brown (10YR 6/3) clay, brown (10YR 4/3) moist; strong fine prismatic, and strong fine and medium angular blocky structure; very hard, firm, very sticky, very plastic; many very fine roots; common very fine and fine interstitial, and few very fine tubular pores; continuous pressure cutans; neutral; abrupt wavy boundary.

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L.SAM tome north of the southwest corner of sec. 13, T. 1N., R. 2E.

(Colors are for dry soil unless otherwise noted).

AI—0 to to 5 inches, bale brown (10YR 5\3) gravelly loam, dark

brown (10YR 3\3) moist; massive; very soil, very firmple,

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BA1—5 to 4 inches, bale brown (10YR 5\3) clay loam, brown (10YR

4\3) moist; moderate very very time granular effervescent: very

A representative profile of mobilonerolic potential time, moder-

B22t--11 to 16 inches, yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; weak fine prismatic, and strong fine angular blocky structure; very hard, very sticky, very plastic; common very fine roots; common very fine and fine interstitial, and few very fine tubular pores; continuous pressure cutans; neutral; abrupt smooth boundary.

B3tca--16 to 19 inches, very pale brown (10YR 7/3) clay loam, light yellowish brown (10YR 6/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky, plastic; few very fine roots; many very fine and fine interstitial pores; common thin clay films on faces of peds; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C1sica--19 to 39 inches, white (10YR 8/1) clay loam, pale brown (10YR 6/3) moist; massive; very hard, firm, sticky, plastic; very few very fine roots; common very fine and fine interstitial pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C2sicam--39 to 50 inches, very pale brown (10YR 8/3) strongly cemented duripan, very pale brown (10YR 7/4) moist; strong fine platy structure; brittle in spots, very hard, very firm, nonsticky, nonplastic; common very fine and fine interstitial pores; strongly effervescent; moderately alkaline.

Thickness of the solum and depth to strongly cemented hardpan ranges from 22 to 39 inches. Color of the A1 horizon includes hue of 10YR, value of 5 to 7 dry and 3 to 4 moist, and chroma of 3. The A horizon is massive, or it has weak or moderate, thin or medium platy structure. Consistence ranges from soft to slightly hard when dry. Color of the Bt horizons includes hue of 10YR, value of 5 to 7 dry and 4 or 5 moist, and chroma of 3 or 4. Structure is moderate very fine granular in the upper part to strong fine prismatic and strong fine and medium angular blocky in the lower part. Texture is clay but may include some subhorizons of clay loam textures. Color of the hardpan has hue of 10YR, value of 7 or 8 dry, 6 or 7 moist, and chroma of 1 to 4. The hardpan may contain scattered areas of indurated fragments.

Haploxerollic Durargids, fine, montmorillonitic, frigid, gravelly loam, 2 to 4 percent slopes (50).--This soil occurs as irregular-shaped areas on alluvial fans. This soil has the profile similar to that described for the soil family. Included are about 10 percent Buster and Lien soils.

The runoff is medium, and the erosion hazard is slight to moderate.

Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow

The soils in the area representing this family are gently sloping to strongly sloping. They formed on old alluvial fans from andesite, dacite and tuffs. The vegetation consists of black sagebrush, squirreltail, Indian ricegrass, rabbitbrush, and a few juniper trees. They are at elevations of 6,400 to 6,700 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 44° to 47° F.; and the frost-free season is about 110 days. They are in Area 8.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown gravelly loam surface layer 3 inches thick; (2) a brown gravelly clay loam layer about 8 inches thick; and (3) a very pale brown stratified strongly cemented hardpan and weakly cemented gravelly and very gravelly sandy loam layer that extends to 60 inches.

These soils are well drained. They have moderately slow permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

They are used for livestock grazing, recreation and wildlife habtiat.

A representative profile of Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow gravelly loam, 2 to 8 percent slopes, rangeland, is in Nye County, Nevada in the northwestern part of Area 8, at a site about 0.55 mile west, 0.8 mile south of the northeast corner of section 10, T. 13 N., R. 52 E.

(Colors are for dry soil unless otherwise noted).

A--0 to 3 inches, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine platy structure; slightly hard, friable, slightly sticky, slightly plastic; few root crowns; many very fine and fine vesicular pores; 35 percent gravel, 5 percent cobbles; noneffervescent; moderately alkaline; clear smooth boundary.

B2t--3 to 11 inches, brown (7.5YR 5/4) gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, firm, sticky, plastic; many very fine and fine roots; common very fine and fine tubular and interstitial pores; 20 percent gravel, 5 percent cobbles; patchy clay films; moderately alkaline; abrupt wavy boundary.

Clsicam--11 to 36 inches, very pale brown (10YR 8/3) stratified strongly cemented duripan and weakly cemented gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; very hard and hard, very firm and firm, non-sticky, nonplastic; very few very fine and fine roots; common fine tubular and interstitial pores; 40 percent gravel, 10 percent cobbles; violently effervescent; strongly alkaline; clear wavy boundary.

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C2si--36 to 60 inches, very pale brown (10YR 7/4) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, nonsticky, nonplastic; very few very fine roots; common very fine and fine tubular and interstitial pores; 60 percent gravel, 10 percent cobbles; weakly cemented; effervescent; strongly alkaline.

The solum thickness and depth to the strongly cemented lime-silica hardpan is 10 to 12 inches. The A horizon has hue of 10YR, value of 6 or 7 dry, and chroma of 2 or 3. The texture is gravelly to very gravelly loam to sandy loam. The B2t horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 or 4. The texture is gravelly clay loam or clay with 35 to 45 percent clay. The Csica horizon has hue of 10YR, value of 6 thru 8, and chroma of 3 thru 6. It has thin strata that are very hard dry and very firm moist. The texture is gravelly to very gravelly sandy loam with 40 to 70 percent gravel and 5 to 10 percent cobbles.

Haploxerollic Durargids association (51).--This association occurs as irregular-shaped areas on gently sloping to gently rolling old alluvial fans. It consists of 60 percent Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow, gravelly loam, 2 to 8 percent slopes; and 30 percent Haploxerollic Durargids, loamy-skeletal, mixed, mesic, gravelly loam, 2 to 8 percent slopes. Included are about 10 percent Abgese and Yody soils along drainageways.

The loamy-skeletal Haploxerollic Durargids are on the higher parts of ridges. The profiles are the same as that described for the soil families.

The vegetation on the soils in this unit is essentially the same as that described for each soil family.

The runoff for these soils is medium, and the erosion hazard is slight to moderate.

Haploxerollic Durargids, loamy-skeletal, mixed, mesic

The soils in the area representing this family are gently sloping to strongly sloping. They formed on old alluvial fans mainly from andesite, dacite and tuffs. The vegetation consists of black sagebrush, rabbitbrush, squirreltail, Indian ricegrass, galleta grass, ephedra and a few juniper trees. They are at elevations of 6,400 to 6,800 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 44° to 47° F.; and the frost-free season is 100 to 120 days. These soils are in Area 10.

Typical profiles for the soil family have a sequence of five main parts: (1) a pale brown gravelly loam surface layer 3 inches thick; (2) a pale brown gravelly sandy clay loam layer about 5 inches thick; (3) a very pale brown gravelly sandy loam layer about 18 inches thick that contains discontinuous very hard silica-cemented layers 1 to 3 inches thick; (4) a very pale brown strongly cemented hardpan about 16 inches thick; and (5) a very pale brown very gravelly loamy sand that extends to at least 60 inches.

These soils are well drained. They have moderate permeability. Available water capacity is low. The runoff is medium, and the erosion hazard is slight.

They are used for livestock grazing, recreation, and wildlife habitat.

A representative profile of Haploxerollic Durargids, loamy-skeletal, mixed, mesic, gravelly loam, 4 to 15 percent slopes, rangeland, is in Nye County, Nevada in the extreme northwest part of Area 8, Duckwater Planning Unit, at a site about 0.25 mile west, 0.25 mile south of the northeast corner of section 33, T. 13 1/2 N., R. 52 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine platy structure; slightly hard, friable, slightly sticky, slightly plastic; few root crowns; many very fine and fine vesicular pores; 35 percent gravel, 2 percent cobbles; effervescent; moderately alkaline; abrupt smooth boundary.

B2--3 to 8 inches, pale brown (10YR 6/3) gravelly sandy clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine to coarse roots; common very fine and fine tubular and interstitial pores; 20 percent gravel; effervescent; moderately alkaline; abrupt smooth boundary.

C1sica--8 to 26 inches very pale brown (10YR 8/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, friable, nonsticky, nonplastic; few fine roots; common very fine and fine tubular and interstitial pores; 40 percent gravel, 3 percent cobbles; many gravel-sized pan fragments; discontinuous laminar caps; few discontinuous very hard layers 1 to 3 inches thick; violently effervescent; strongly alkaline; clear wavy boundary.

C2sica--26 to 42 inches, very pale brown (10YR 8/3) very gravelly loamy sand, light yellowish brown (10YR 6/4) moist; massive; 80 percent very hard, very firm, platy silica-cemented material; 20 percent soft very gravelly loamy sand; very few fine roots in the loamy sand; 50 percent gravel, 10 percent cobbles; violently effervescent; strongly alkaline; clear wavy boundary.

C2--42 to 60 inches, very pale brown (10YR 7/3) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky, nonplastic; very few very fine tubular and vesicular pores; 50 percent gravel, 10 percent cobbles; violently effervescent; strongly alkaline.

The solum thickness and depth to the Clsica horizon is 8 to 14 inches. The depth to the hardpan is 20 to 32 inches. The control section has average textures of gravelly to very gravelly loam or sandy loam with less than 18 percent clay and 35 to 65 percent gravel. The A horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3. The texture is gravelly or very gravelly sandy loam or loam. The B2 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. The texture is gravelly loam, sandy loam, or sandy clay loam. The Clsica horizon is slightly hard to soft with discontinuous layers cemented with silica.

Haploxerollic Durargids-Abgese association (52).--This association occurs as irregular-shaped areas on gently sloping to gently rolling old alluvial fans. It consists of 45 percent Haploxerollic Durargids, loamy-skeletal, mixed, mesic gravelly loam, 2 to 8 percent slopes; 25 percent Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow gravelly loam, 2 to 8 percent slopes; and 20 percent Abgese gravelly sandy loam, 2 to 4 percent slopes. Included are about 10 percent other Haplargids and Calciorthids.

The loamy-skeletal Haploxerollic Durargids are on the higher parts of the unit. The clayey, montmorillonitic Haploxerollic Durargids are on the more gentle sideslopes and fan tops. Abgese soils are along drainageways. The profiles are similar to those described for the series and soil families, except the loamy-skeletal Haploxerollic Durargids and Abgese soils have thinner solums, and the Abgese soils have less sand in the surface.

The vegetation for the soils of the respective soil families is black sagebrush, rabbitbrush, squirreltail, Indian ricegrass, and juniper trees. In some areas juniper is the dominant vegetation. Vegetation on Abgese soils consists of big sagebrush, squirreltail, and Indian ricegrass.

The component soils in this unit have medium runoff. The erosion hazard is slight for the clayey, montmorillonitic and loamy-skeletal Haploxerollic Durargids; it is moderate by wind and water for the Abgese soils.

Haploxerollic Durorthids, loamy-skeletal, mixed, frigid

The soils in the area representing this family are nearly level to strongly sloping. They have formed in old alluvial fans from alluvium derived from limestone and shale. The vegetation consists of juniper and pinyon pine with scattered big sagebrush and miscellaneous forbs. They are at elevations of 6,300 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is 90 to 100 days.

Typical Soil Family profiles have a sequence of four main parts: (1) a light brownish gray gravelly loam surface layer 3 inches thick; (2) a pale brown gravelly loam layer about 11 inches thick; (3) a light gray very gravelly sandy loam about 10 inches thick; and (4) a white to very pale brown strongly cemented hardpan that extends to at least 40 inches.

These soils are well drained. They are moderately rapidly permeable. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

They are used to provide grazing for livestock and wildlife.

A representative profile of Haploxerollic Durorthids, loamy-skeletal, mixed, frigid, gravelly loam, 0 to 4 percent slopes, rangeland, is in White Pine County, Nevada at a site about 50 feet east of the southwest corner of section 7, T. 16 N, R. 57 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; massive; very soft, very friable, nonsticky, nonplastic; root crowns; many very fine and fine interstitial, and few very fine vesicular pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

B2--3 to 14 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; few thin clay films as bridges; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C1sica--14 to 24 inches, light gray (10YR 7/2) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, nonsticky, nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; strongly effervescent; strongly alkaline; abrupt smooth boundary.

C2sicam--24 to 40 inches, white (10YR 8/1) very pale brown (10YR 8/3), light gray (10YR 7/2), very pale brown (10YR 7/3) strongly cemented duripan, very pale brown (10YR 7/3 and 7/4), light brownish gray (10YR 6/2), pale brown (10YR 6/3) moist; strong medium platy structure; very hard, very firm, nonsticky, nonplastic; very few very fine roots; common very fine and fine interstitial pores; violently effervescent; very strongly alkaline.

Thickness of the solum ranges from 10 to 20 inches and depth to strongly cemented hardpan ranges from 21 to 30 inches. These soils are usually dry. The color of the A1 horizon includes hue of 10YR, value of 6 to 7 dry and 3 to 5 moist, and chroma of 2 or 3. The A1 horizon is weak thin platy structure, or it is massive. Consistence ranges from soft to slightly hard when dry. The B2 horizons have hue of 10YR, value of 6 to 7 dry and 4 to 5 moist, and chroma of 3. Textures are gravelly loam or gravelly fine sandy loam. Structure is moderate fine subangular blocky or massive. Color of the hardpan is highly variable having hue of 10YR or 7.5YR, value of 7 to 8 dry and 6 to 8 moist, and chroma of 1 to 4.

Haploxerollic Durorthids, loamy-skeletal, mixed, frigid gravelly loam, 4 to 15 percent slopes (53).--This soil occurs as irregular-shaped areas on old alluvial fan piedmonts. This soil has the same profile as that described for the soil family. Included are about 10 percent Haploxerollic Durargids, and Nark soils.

The vegetation is primarily pinyon pine and juniper. Big sagebrush on this unit appears to be dying out.

The runoff is medium, and the erosion hazard is moderate.

Haploxerollic Durorthids-Abruptic Xerollic Durargids association (54).--This association occurs as irregular-shaped areas on old alluvial fan piedmonts. It consists of 65 percent Haploxerollic Durorthids, loamy-skeletal, mixed, frigid, gravelly loam, 4 to 15 percent slopes; and 30 percent Abruptic Xerollic Duargids, clayey, montmorillonitic, frigid, shallow gravelly loam, 2 to 8 percent slopes. Included are about 5 percent Nark soils.

The Haploxerollic Durorthids have loamy-skeletal cambic horizons and hardpans occurring at depths below 24 inches. The Abruptic Xerollic Durargids have fine textured argillic horizons and hardpans at depths less than 24 inches. These soils have the same profile as that described for the respective Soil Families.

The vegetation on the Haploxerollic Durorthids is pinyon pine, juniper, scattered big sagebrush and black sagebrush. The Abruptic Xerollic Durargids have vegetation consising primarily of juniper with very little understory.

The runoff for the soils in this unit is medium. The erosion hazard is moderate.

Hopeka Series

The Hopeka series are rolling to steep soils that are very shallow over limestone bedrock. They are on tilted, fractured limestone pediments. They have formed in place from the limestone. The vegetation consists of a sparse cover of black sagebrush, ephedra, rabbitbrush, cliffrose, squirreltail, beardless bluebunch wheatgrass, mountain mahogany, pinyon and juniper. They are at elevations of 6,200 to 6,800 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 42° to 44° F.; and the frost-free season is about 90 days.

Typical Hopeka soil profiles have a sequence of four main parts: (1) a pale brown surface layer of very gravelly loam about 2 inches thick; (2) a pale brown gravelly loam about 4 inches thick; (3) a white finely fractured limestone about 3 inches thick; and (4) gray hard fractured limestone that extends to at least 40 inches.

Hopeka soils are well drained. They have moderate permeability. Available water capacity is very low. The runoff is medium to rapid, and the erosion hazard is moderate.

The Hopeka soils are used for livestock grazing and wildlife habitat.

A representative profile of Hopeka very gravelly loam, 8 to 30 percent slopes, rangeland, is in Nye County, Nevada at a site about 3,890 feet south and 2,080 feet west of the northeast corner of sec. 15, T. 10 N., R. 59 E., or 0.15 mile north and 0.55 mile east of Manzone Well.

(Colors are for dry soil unless otherwise noted).

A11--0 to 2 inches, pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak fine platy parting to weak fine granular structure; soft, friable, slightly sticky, slightly plastic; few fine roots; common fine and very fine vesicular pores; soil mass about 55 percent by volume partly lime-coated gravel; surface is covered with about 80 percent gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

A12--2 to 6 inches, pale brown (10YR 6/3) gravelly loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, friable, slightly sticky, slightly plastic; common very fine, fine and medium roots; common very fine and fine interstitial pores; about 35 percent by volume limestone gravel; violently effervescent; moderately alkaline; abrupt wavy boundary.

C1ca--6 to 9 inches, white (10YR 8/2) very gravelly sandy loam in which the gravels consist essentially of finely fractured limestone. Limestone gravels have solution pits on tops and are coated with lime on the sides and bottom; pendants and yellowish stains on lower sides; massive; few fine roots in fractures; abrupt wavy boundary.

R--9 to 40 inches, gray (10YR 6/1) fractured limestone bedrock. Fractures are plugged with lime in the upper part.

Depth to limestone ranges from 4 to 10 inches. The A horizon is 4 to 10 inches thick. Hue is 2.5Y or 10YR, value is 5 thru 7 and chroma is 2 or 3. Structure is weak fine platy to weak very fine granular in the upper part and weak fine granular to weak very fine subangular blocky in the lower part. Gravel content ranges from 35 to 65 percent by volume. Texture ranges from very gravelly loam to gravelly silt loam. In many pedons the C1ca horizon is absent and the A horizon rests directly on limestone bedrock.

Hopeka-Rock outcrop complex (55).--This complex occurs in irregular-shaped areas on smooth, rolling to steep dissected limestone pediments. It consists of 60 percent Hopeka very gravelly loam, 8 to 30 percent slopes; and 25 percent Rock outcrop. Included are about 15 percent other soils which are similar to Hopeka soils but are deeper than 10 inches; Ramshorn soils in narrow drainageways; Nuc soils on old alluvial fans; and other shallow soils over clays and shales that are interbedded with the limestone in places.

The profile for the Hopeka soil is the same as that described for the series. They are on smoother parts of the landscape. The limestone Rock outcrop occurs on steep sideslopes, almost barren ridges, and occasionally rises sharply above the surrounding Hopeka soils.

Vegetation on the Hopeka soil consists of a sparse cover of black sagebrush, ephedra, rabbitbrush, cliffrose, mountain mahogany, pinyon pine and juniper. The Rock outcrop is essentially barren.

The Hopeka soils have medium to rapid runoff, and the erosion hazard is moderate.

Ilton Series

The Ilton series are gently rolling to steep soils that have formed in dissected tuffaceous sandstone. The vegetation consists of black sagebrush, juniper, pinyon pine, squirreltail and Indian ricegrass. They are at elevations of 6,400 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is 90 to 100 days. They are in Area 2.

Typical Ilton soil profiles have a sequence of four main parts: (1) a pale brown gravelly sandy loam surface layer about 4 inches thick; (2) a very pale brown gravelly sandy clay loam layer about 6 inches thick; (3) a very pale brown gravelly sandy loam about 14 inches thick that has thin 1 to 2-inch layers that are silica cemented; and (4) a pale yellow to very pale brown soft platy tuffaceous sandstone that extends to 60 inches.

Ilton soils are well drained. They have moderately slow permeability. Available water capacity is low. Runoff is medium to rapid, and the erosion hazard is moderate.

Ilton soils are used for livestock grazing, recreation, and wildlife habitat.

A representative profile of Ilton gravelly sandy loam, 4 to 15 percent slopes, rangeland, is in White Pine County, Nevada at a site approximately 0.2 mile west, 0.55 mile south of the northeast corner of section 12, T. 15 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A11--0 to 1 inch, pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; weak fine platy structure; soft, very friable, nonsticky, nonplastic; very few fine roots; common very fine and fine roots; common very fine and fine vesicular pores; 30 percent gravel, 5 percent cobbles; soil is mounded to 3 inches under sagebrush plants; violently effervescent; moderately alkaline; abrupt smooth boundary.

A12--1 to 4 inches, pale brown (10YR 6/3) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky, nonplastic; common very fine to medium roots; common very fine to medium vesicular and tubular pores; 20 percent gravel, 5 percent cobbles; violently effervescent; moderately alkaline; abrupt smooth boundary.

C1ca--4 to 10 inches, very pale brown (10YR 7/4) gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky, slightly plastic; common very fine to medium roots; common very fine and fine interstitial and tubular pores; 20 percent gravel, 10 percent cobbles; many hard fine lime fragments that wet up easily; gravel is lime coated; violently effervescent; moderately alkaline; abrupt wavy boundary.

C2sica--10 to 24 inches, very pale brown (10YR 7/4) gravelly sandy loam, brownish yellow (10YR 6/6) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; very few fine roots; common very fine and fine interstitial and tubular pores; 30 percent gravel, 5 percent cobbles; few nodules 1 to 3 inches in diameter are hard dry, firm moist and have brownish silica stains; few layers 1 to 2 inches thick are hard dry and more limy than the soil mass; violently effervescent; moderately alkaline; abrupt wavy boundary.

C3sica--24 to 36 inches, pale yellow (2.5Y 8/4) soft platy tuffaceous sandstone, light yellowish brown (2.5Y 6/4) moist; strongly effervescent; moderately alkaline; gradual smooth boundary. This horizon contains about 40 percent hard and very firm, noncalcareous, silica-cemented tuffaceous sandstone; and about 15 percent gravel.

C4--36 to 60 inches, very pale brown (10YR 7/3) soft platy tuffaceous sandstone, yellowish brown (10YR 5/4) moist; few seams of lime; few roots in fractures; about 15 percent gravel embedded in the sandstone; violently effervescent; moderately alkaline.

The depth to the calcic horizon is 3 to 6 inches and the depth to tuffaceous sandstone is 21 to 30 inches. The control section is sandy loam to gravelly sandy clay loam that averages 10 to 18 percent clay. The soil has hue of 10YR or 2.5Y, value of 5 thru 7, and chroma of 3 thru 6. Stony and cobbly pedons occur. The C horizons are weakly cemented to cemented.

Ilton gravelly sandy loam, 4 to 15 percent slopes (56).--This soil occurs in irregular-shaped areas on moderately sloping to rolling uplands on long, narrow hills or ridges that branch at higher elevations. The profile is the same as that described for the series. Included are about 20 percent fine-loamy Typic Camborthids which support big sagebrush along narrow drainageways; Typic Haplargids in big sagebrush flats; Typic Torriorthents on some steeper sideslopes; and Nuc soils on a few ridgetops on the south side of Area 2.

The vegetation consists of juniper, black sagebrush, rabbitbrush, Indian ricegrass, and squirreltail.

This soil has medium runoff, and the erosion hazard is moderate.

Ilton gravelly sandy loam, 15 to 50 percent slopes (57).--This soil occurs as irregular-shaped areas that are hilly to steep. The profile for this soil is similar to that described for the series, except it is on steeper slopes. It is thinner, the calcic horizon is not so pronounced, and there are a few cobbles and stones. Included are about 20 percent loamy-skeletal Xerollic Camborthids on the highest ridgetops, and sandstone outcrops and shallow Torriorthents on the steep sideslopes.

This soil has rapid runoff, and the erosion hazard is moderate.

Lien Series

The Lien series are nearly level to gently sloping soils that formed in old alluvial fans from limestone and shale. The vegetation consists of black sagebrush, rabbitbrush, Indian ricegrass, and miscellaneous forbs. They are at elevations of 6,350 to 6,800 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is 90 to 100 days.

Typical Lien soil profiles have a sequence of three main parts: (1) a light brownish gray very gravelly sandy loam surface layer 2 inches thick; (2) pale brown to white, thin very gravelly loam layers about 11 inches thick that range from soft to very hard; and (3) a white indurated hardpan that extends to at least 18 inches.

Lien soils are well drained. They have moderately rapid permeability. Available water capacity is low. Runoff is slow, and the erosion hazard is slight.

Lien soils are used to provide grazing for livestock and wildlife habitat.

A representative profile of Lien very gravelly sandy loam, 0 to 4 percent slopes, rangeland, is in White Pine County, Nevada at a site approximately 2,600 feet west and 2,600 feet north of the southeast corner of section 23, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 2 inches, light brownish gray (10YR 6/2) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, friable, nonsticky, nonplastic; root crowns, and few medium roots; many very fine and fine interstitial pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C1--2 to 6 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate very fine granular structure; soft, friable, sticky, plastic; common very fine and fine roots; many very fine and fine interstitial pores; few very thin clay films as bridges; strongly effervescent; strongly alkaline; abrupt smooth boundary.

C2sica--6 to 10 inches, pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; massive; soft, friable, slightly sticky, slightly plastic; few very fine and fine roots; common fine and medium interstitial pores; 70 to 85 percent pan fragments; violently effervescent; strongly alkaline; abrupt wavy boundary.

C3sica--10 to 13 inches, white (10YR 8/2) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; very hard, firm, slightly sticky, slightly plastic; very few very fine roots; few fine and medium interstitial pores; horizon is weakly cemented but has loam textures; violently effervescent; strongly alkaline; abrupt wavy boundary.

C4sicam--13 to 18 inches, white (10YR 8/2) indurated hardpan, light yellowish brown (10YR 6/4) moist; massive; extremely hard, very firm, nonsticky, nonplastic; violently effervescent; strongly alkaline.

Depth to the hardpan ranges from 6 to 14 inches. The A1 horizon has hue of 10YR, value of 5 to 7 dry and 4 or 5 moist, and chroma of 2 or 3. Consistence ranges from soft to slightly hard when dry. The C horizon has hue of 10YR, value of 6 to 7 dry and 4 or 5 moist, and chroma of 3 or 4. Structure is moderate very fine granular or massive. Consistence is soft to very hard when dry. The C horizons contain about 60 to 80 percent coarse fragments that are composed of indurated silica fragments or lime and silica coated gravels. The hardpan has hue of 10YR, value of 7 to 8 dry and 6 to 7 moist, and chroma of 1 to 4. It has platy structure intermixed with many massive parts. There are many continuous opal coats across gravel or pan fragments.

Lien very gravelly sandy loam, 0 to 4 percent slopes (58).--This soil occurs on old alluvial fan piedmonts in irregular-shaped areas. It is in Area 1. The profile for this soil is the same as that described for the series. Included are about 10 percent Buster and Nark soils.

The Lien soil have slow runoff, and the erosion hazard is slight.

Loza Series

The Loza series are strongly sloping to moderately steep gravelly soils that have cemented silica-lime hardpans. They have formed in strongly dissected, old alluvial fans from tuffs. The vegetation is pinyon pine, black sagebrush, Indian ricegrass, and squirreltail. They are at elevations of 6,500 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 44° to 45° F.; and the frost-free season is about 90 days. Loza soils occur southeast of Currant near Andrew Springs.

Typical Loza profiles have a sequence of four main parts: (1) a grayish brown soft platy gravelly loam surface layer about 2 inches thick; (2) a grayish brown soft subangular blocky gravelly loam layer about 4 inches thick; (3) a very pale brown soft lime enriched gravelly loam about 3 inches thick; and (4) stratified white and very pale brown weakly to strongly cemented gravel layers extending to 60 inches.

Loza soils are well drained to somewhat excessively drained. The peremability is moderate to the hardpan, then very slow. Available water capacity is low. The runoff is medium, and the erosion hazard is moderate.

These soils are used for livestock grazing, woodland, and wildlife habitat.

lime plaster.

These walls are used for livestock pasture, woodland, and wild-

pure water cubic ft lot. one tenth it sulfur, and one eighth

permeability is moderate to the depth, upon very slow. Addi-

tone soils are well drained to somewhat excessively drained.

tenths to (5) inches.

and very hard when moist to strongly cemented layers ex-

ticked vicinity loam about 3 inches thick; and (4) strikingly white

level upon a inches white. (3) a very hard moist silt con-

which: (2) a drainage pronu soil impervious plocky firmly loam

lime plaster.

A representative profile of Loza gravelly loam, 8 to 30 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 0.2 mile south and 0.9 mile west of the northwest corner of section 6, T. 8 N., R. 58 E., or about 0.9 mile east-northeast of Andrew Springs.

(Colors are for dry soil unless otherwise noted).

A11--0 to 2 inches, grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium platy structure; soft, very friable, slightly sticky, slightly plastic; very few fine roots; many fine vesicular pores; about 45 percent by volume pebbles; strongly effervescent; moderately alkaline; abrupt smooth boundary.

A12--2 to 6 inches, grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; many fine tubular pores; about 30 percent by volume pebbles; strongly effervescent; moderately alkaline; clear smooth boundary.

moderately alkaline; clear amber pentagon.

between pH values approx; strongly effervescent;

and coarse sand; very fine imprint beta; spans 30

silkenly artistry, alkaline dramatic? west kind, weight,

emphasizing glacial sentence; soft, very triangle.

dark brittle prove (IUIS 3\5) motel: west very fine

IIA—3 to 9 inches. Extract promo (IUIE 2\5) fervently loam, very

agents smooth pentagon.

a representative profile of loss gravelly loam, 8 to 30 percent

slopes, rectangular, is the type locality. Weakly to moderately brittle

a site about 0.2 mile south and 0.9 mile west of the northeast corner

of section 6, T. 8 N., R. 28 W., on about 0.9 mile east-northeast of

modern pharmacy.

(colors are for dry soil unless otherwise noted).

IIA—0 to 5 inches. Extract promo (IUIK 3\3) fervently loam, very

dark brittle promo (IUIL 3\5) motel: west very fine

and coarse sand; very fine imprint beta; spans 30

between pH values approx; strongly effervescent;

moderately alkaline; clear smooth pentagon.

C1ca--6 to 9 inches, very pale brown (10YR 7/4) gravelly loam, yellowish brown (10YR 5/4) moist; weak very fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; common fine and medium roots; many fine tubular pores; about 30 percent by volume pebbles; common films and a few very fine soft masses of lime; pebbles are lime coated; violently effervescent; moderately alkaline; abrupt wavy boundary.

C2sica--9 to 17 inches, white (10YR 8/2) gravelly clay loam, very pale brown (10YR 7/4) moist; massive; very weakly cemented; hard, firm, sticky, plastic; few fine and medium roots; few fine tubular pores; about 45 percent by volume pebbles; pebbles are a mixture of tuffs and pan fragments; violently effervescent; moderately alkaline; abrupt wavy boundary.

C3sicam--17 to 32 inches, white (10YR 8/1) strongly cemented hardpan, very pale brown (10YR 7/3) moist; extremely hard, extremely firm; few pockets are hard and firm; very few fine roots in these pockets and in fractures; violently effervescent; moderately alkaline; clear wavy boundary.

C4sica--32 to 54 inches, very pale brown (10YR 7/4) weakly cemented tuff gravel, yellowish brown (10YR 5/4) moist; hard, firm; very few fine roots; much less lime than above; pebbles are thinly coated with lime; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C5--54 to 60 inches, light yellowish brown (10YR 6/4) weakly cemented fine and very fine gravel; less than 5 percent by volume loamy sand; noneffervescent; moderately alkaline.

The upper boundary of the calcic horizon is at 6 to 8 inches. The upper boundary of the hardpan is at 12 to 18 inches. Typically, the top 7 inches has to be mixed to meet the thickness requirement for a mollic epipedon. The control section is gravelly loam to gravelly clay loam with 20 to 35 percent clay and 35 to 45 by volume pebbles. The pebbles are mainly tuffs, but may include hardpan fragments. The A horizon has hue of 7.5YR or 10YR, value is 4 to 5 and chroma of 2 or 3. The C horizons vary widely in color with hue of 5YR thru 10YR, value is 4 thru 8 and chroma is 1 thru 4.

Loza-Drewing association (59).--This association occurs in irregular-shaped areas on gently sloping to hilly, dissected tuffs that have been reworked by water. It consists of about 50 percent Loza gravelly loam, 8 to 30 percent slopes; and 35 percent Drewing gravelly loam, 2 to 8 percent slopes. Included are about 15 percent loamy-skeletal Xeric Torriorthents on some of the steeper sideslopes; Fanu soils in narrow drainageways; and a soil similar to Drewing on some of the ridgetops.

The Drewing soil is on gently sloping to moderately sloping ridgetops and sideslopes. The profile for this soil is the same as that described for the series. Loza soil is on the strongly sloping to hilly sideslopes. The profile for this soil is the same as that described for the series.

The vegetation on this unit is pinyon, juniper, black sagebrush, and squirreltail.

The runoff for these soils is medium, and the erosion hazard is moderate.

Nark Series

The Nark series are nearly level to moderately sloping soils that formed on old alluvial fans from limestone and shale. The vegetation consists of big sagebrush, rabbitbrush, needle-and-thread grass, Great Basin wildrye, Indian ricegrass, and scattered juniper. They are at elevations of 6,300 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is 90 to 100 days. These soils are in Area 1.

Typical Nark soil profiles have a sequence of four main parts: (1) a grayish brown gravelly loam surface layer about 2 inches thick; (2) a grayish brown to pale brown gravelly clay loam over a very pale brown gravelly loam about 12 inches thick; (3) a white loam to sandy loam with silica-lime cemented nodules about 21 inches thick; and (4) a white indurated hardpan at 35 inches depth.

Nark soils are well drained and have moderately slow permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is slight.

Nark soils are used to provide grazing for livestock and wildlife.

A representative profile of Nark gravelly loam, 0 to 4 percent slopes is in White Pine County, Nevada at a site 1,800 feet south and 1,800 feet west of the northeast corner of section 25, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 2 inches, grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; very soft, very friable, slightly sticky, slightly plastic; root crowns only; many very fine and fine interstitial pores; mildly alkaline; abrupt smooth boundary.

B21t--2 to 6 inches, grayish brown (10YR 5/2) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; slightly hard, friable, sticky, plastic; common very fine roots; many very fine and fine interstitial pores; common thin clay films as bridges; and few very thin clay films on faces of peds; moderately alkaline; abrupt smooth boundary.

B22t--6 to 10 inches, pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; moderate fine angular blocky structure; hard, friable, sticky, plastic; common very fine and few fine roots; many very fine and fine interstitial pores; common thin clay films as bridges; moderately alkaline; abrupt smooth boundary.

B23tca--10 to 14 inches, very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; strong fine angular blocky structure; hard, firm, sticky, very plastic; common very fine and few fine roots; many very fine and fine interstitial pores; few thin clay films as bridges and coats; strongly effervescent; strongly alkaline; abrupt wavy boundary.

C1sica--14 to 23 inches, white (10YR 8/2) loam, pale brown (10YR 6/3) moist; strong fine subangular blocky structure; 70 to 80 percent silica-lime cemented durinodes; very hard, firm, slightly sticky, slightly plastic; common micro roots; common fine and medium interstitial pores; violently effervescent; strongly alkaline; abrupt wavy boundary.

C2sica--23 to 35 inches, white (10YR 8/1 and 8/2) sandy loam, very pale brown (10YR 7/3) moist; massive; very hard, firm, nonsticky, nonplastic; very few micro roots; common fine and medium interstitial pores; weakly cemented in spots; violently effervescent; strongly alkaline; abrupt wavy boundary.

C3sicam--35 to 40 inches, white (10YR 8/1) indurated hardpan, very pale brown (10YR 7/3) moist; massive; brittle, extremely hard, extremely firm; nonsticky, nonplastic; violently effervescent; strongly alkaline.

Thickness of the solum ranges from 10 to 19 inches and depth to the indurated hardpan ranges from 24 to 38 inches. The A horizon has hue of 10YR, value of 5 to 6 dry and chroma of 2 or 3. When the surface 7 inches is mixed, value will be less than 5.5 dry. The A1 horizon is weak or moderate very fine granular structure, or is massive. Consistence ranges from soft to slightly hard when dry. The B2t horizons have hue of 10YR or 7.5YR, value of 5 to 7 dry and 3 to 5 moist, and chroma of 2 to 4. Structure is moderate or strong angular blocky or can be weakly prismatic. Texture is gravelly clay loam but can include subhorizons of gravelly loam. When the argillic horizons are mixed, the weighted average clay content will range from 27 to 35 percent. The hardpan has hue of 10YR or 7.5YR, value of 6 to 8 dry and 5 to 7 moist, and chroma of 1 or 4. The horizons immediately above the indurated hardpan may consist of 3 to 6 inches of strongly cemented material.

Nark gravelly loam, 0 to 4 percent slopes (60).--This soil occurs as irregular-shaped areas on old alluvial fan piedmonts. The profile for this soil is the same as that described for the series. Included are about 5 percent Lien soils.

The vegetation is primarily big sagebrush, rabbitbrush, needle-and-thread grass, and Indian ricegrass.

The runoff is medium, and the erosion hazard is slight.

Nark gravelly loam, 4 to 8 percent slopes (61).--This soil occurs as irregular-shaped areas on old alluvial fan piedmonts. The profile for this soil is the same as that described for the series. Included are about 10 percent Lien and Belmill soils.

The vegetation consists primarily of big sagebrush, rabbitbrush, needle-and-thread grass, Great Basin wildrye and Indian ricegrass with scattered islands of black sagebrush.

The runoff is medium, and the erosion hazard is slight.

Nuc Series

The Nuc series are moderately sloping to steep gravelly soils that occur on old, strongly dissected alluvial fans. These soils formed in alluvium mainly from limestone, but include small amounts from other sedimentary and volcanic rocks. The vegetation consists of black sagebrush, rabbitbrush, Indian ricegrass, squirreltail, ephedra, shadscale, horsebrush, and a few juniper and pinyon pine trees. They are at elevations of 6,200 to 6,800 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is about 90 days. Nuc soils occur mostly east of Currant near Manzone Well.

Typical Nuc soil profiles have a sequence of three main parts: (1) a light gray to pale brown gravelly and very gravelly loam surface layer about 12 inches thick; (2) a white very gravelly clay loam layer about 9 inches thick; and (3) a series of white and very pale brown very gravelly clay loam and very gravelly loam layers which contain weak cementation and extend to 60 inches.

Nuc soils are well to somewhat excessively drained. They are moderately permeable to the weakly cemented horizons and slowly permeable through these latter cemented layers. Available water capacity is low. The runoff is medium, and the erosion hazard is moderate.

These soils are used for livestock grazing and wildlife habitat.

These soils are used for flaxseed growing and principle pasture-
ly moderate.

A representative profile of Nuc gravelly loam, 4 to 8 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 0.2 mile south, 0.4 mile west of the northeast corner of section 16, T. 10 N., R. 59 E., or about 0.45 mile north, 0.3 mile west of Manzone Well.

(Colors are for dry soil unless otherwise noted).

A11--0 to 1 inch, light gray (10YR 7/2) gravelly loam, brown (10YR 5/3) moist; weak medium platy structure parting to weak granular structure; slightly hard, very friable, slightly sticky, slightly plastic; very few fine roots; common fine and very fine vesicular pores; about 25 percent by volume limestone pebbles, mostly lime coated; violently effervescent; moderately alkaline; abrupt smooth boundary.

A12--1 to 3 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate fine granular structure; soft, very friable, slightly sticky, slightly plastic; few fine roots; common fine and very fine interstitial pores; about 15 percent by volume limestone pebbles; violently effervescent; moderately alkaline; abrupt smooth boundary.

moderately alkaline; sprout smooth pomaceous.

horsepower pl volume limestone happier; violently dirtier;
common fine and very fine interstitial horse; sport IS
intruder, alluvium strict, alluvium basaltic; two time scope;
A\3) motel; moderate fine argument structure; salt, very
A15--I to 3 inches, bale prom (JOX 3\3) strongly load, prom (JOX
assent; moderately alkaline; sprout smooth pomaceous.

A representative profile of one strongly load, 4 to 8 percent
alpobes, rampaging, in in two country, passage in an mushroomed area at
a site about 0.5 mile south, 0.4 mile west of the northeast corner
of section 18, T. 10 N., R. 20 E., or about 0.25 mile north, 0.3
mile west of Hamzone Well.

(Colors are for dry soil unless otherwise noted).

A1--0 to 1 inch, light gray (10X 7\3) strongly load, prom (10X
4\3) motel; weak medium blocky structure parting to weak
granular structure; slightly hard, very friable, slightly
sticky, slightly brassic; very few fine roots; common fine
and very fine vesicular pores; about 15 percent pl volume
limestone happier, mostly fine coastal; violently stic-

B21--3 to 9 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; moderate very fine subangular blocky and fine granular structure; slightly hard, friable, slightly sticky, plastic; common very fine, fine and medium roots; common very fine and fine interstitial pores; about 15 percent by volume limestone pebbles that are lime coated that is thicker on lower side; violently effervescent; moderately alkaline; abrupt smooth boundary.

B22ca--9 to 12 inches, very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, sticky, plastic; common very fine to fine and medium roots; common very fine and fine interstitial pores; about 50 percent by volume lime coated gravel; violently effervescent; moderately alkaline; clear wavy boundary.

C1ca--12 to 21 inches, white (10YR 8/1) very gravelly clay loam, very pale brown (10YR 8/3) moist; massive; hard, firm, sticky, plastic; soil mass is weakly cemented with some discontinuous platy areas that are strongly cemented; very hard and very firm; few fine roots between lime plates and in pockets of softer soil; few fine interstitial pores; few thin brownish silica patches on undersides of fragments; about 50 percent by volume lime coated and lime cemented gravel; violently effervescent; strongly alkaline; clear wavy boundary.

C2ca--21 to 36 inches, white (10YR 8/2) very gravelly clay loam, very pale brown (10YR 7/3) moist; massive; hard, friable, sticky, plastic; a few lenses are weakly cemented and firm moist; very few fine roots; few fine interstitial pores; about 60 percent by volume lime coated gravel; few thin brownish silica patches on undersides of fragments; violently effervescent; strongly alkaline; clear wavy boundary.

C3ca--36 to 60 inches, very pale brown (10YR 7/4) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, slightly sticky, slightly plastic; weakly cemented; very few fine roots; about 90 percent by volume gravel; violently effervescent; strongly alkaline.

The solum is 10 to 16 inches thick. A weakly cemented to cemented pan is within 16 inches. Silica coatings are on the undersides of the more strongly cemented fragments in most profiles. The dominant texture of all horizons is gravelly to very gravelly loam and light clay loam. The range includes very gravelly sandy loam or loamy sand. The soil has hue of 10YR, value of 6 thru 8 and chroma of 2 thru 4. The Cca horizons range from moderately to strongly alkaline.

The median is 10 to 14 inches thick. A nearly cemented to cemented horizon is within 14 inches. Silica constitute one of the ingredients of the more strongly cemented fragments in most brownish. The dominant texture of all positions it nearly to very nearly loam and light clay loam. The range reaction very nearly neutral loam or loamy sand. The soil pas pne of LOAY, aslno of ; ctrs a and ctrcms of ; ctrs . The Cca portsom range from moderately to strongly silicified.

Cca--38 to 50 inches, very hale pnomu (LOAY 7\8) very grayelly loam; yellowish brown (LOAY 6\4) moist; massive; hard, firm; slightly sticky; plastic; many cemented; many fine and very fine tubular pores; violent effervescence; strongly alkaline.

Cca--50 to 60 inches, white (LOAY 8\3) very gravelly clay loam; very hale pnomu (LOAY 7\3) moist; massive; hard, firmish; sticky; plastic; a few lenses are nearly cemented and firm moist; very few fine roots; few fine interstitial pores; about 60 percent by volume lime coated gravel; few fine prominent splits across 60 percent by volume gravelly; violent effervescence; strongly alkaline.

Nuc very gravelly loam, 4 to 8 percent slopes (62).--This soil occurs in long, narrow bands just below high lying limestone mountains. The profile is the same as that described for the series. Included are about 20 percent Ramshorn soils which lack weakly cemented layers are on more recent fans, and Fanu soils in the more prominent drainageways.

The vegetation on Nuc soils is mainly black sagebrush and juniper with an understory of squirreltail and Indian ricegrass.

This soil has medium runoff, and the erosion hazard is moderate.

Nuc association (63).--This association occurs as irregular-shaped areas on old, strongly dissected alluvial fans. It consists of about 45 percent Nuc gravelly loam, 4 to 15 percent slopes; and about 40 pereent Nuc very gravelly loam, 30 to 50 percent slopes. Included are about 15 percent Xeric Torriorthents on exposed volcanic tuffs; Hopeka soils over limestone or other sedimentary rock; and Ramshorn soils in narrow drainageways.

The profiles for these soils are the same as that described for the series, except for steeper slopes. Nuc gravelly loam, 4 to 15 percent slopes is on the tops of terraces or alluvial fans. The Nuc very gravelly loam, 30 to 50 percent slopes, is on the steeper sideslopes.

The runoff for the component soils in this unit is medium, and the erosion hazard is moderate.

the erosion method is employed.

The result for the component cells in this unit is begin- and

originations.

The profiles for these cells are the same as that described

for the series, except for greater slope. The gravelly loam, A to

12 percent slopes, is on the tops of terraces or alluvial fans. The

very gravelly loam, 20 to 50 percent slopes, is on the greater

part of about 45 percent and gravelly loam, 30 to 75 percent slopes;

included are about 15 percent Kerfoot fortifortments on oxbows;

Kerfoot fine sandy loam and Kerfoot soils in water drainageways.

—(10) Lake Alvin loam, 0 to 2 percent slopes.—This soil

occurs in small areas, mostly in the northeastern part of the

county. The profile is the same as that described for the series.

typically has a thinner dark surface layer and is more

imperfectly drained. Runoff is slow.

Included with this soil in mapping are small areas of

Arenzville soils; small areas of a soil that has a gray subsoil;

and a soil on the edge of terraces that has a thin, dark

surface layer.

Use and management.—(10) Most of the acreage is used for

—Alluvial terrace erosion.—(10) Alluvial terrace erosion occurs

Nuc-Xeric Torriorthents association (64).--This association occurs as irregular-shaped areas in narrow valley positions. It consists of 35 percent Nuc very gravelly loam, 4 to 15 percent slopes; 25 percent Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow very gravelly sandy loam, 4 to 15 percent slopes; 15 percent Ramshorn gravelly sandy loam, 2 to 8 percent slopes; and 15 percent Rock outcrop. Included are about 10 percent Xeric Torriorthents on the flood plains, and loamy-skeletal Xerollic Calciorthids and Lithic Xeric Torriorthents on the ridges.

The Nuc soil is on ridge tops. The profile is similar to that described for the series, except the cambic horizon is thinner and there is more gravel of flow rock origin. The Xeric Torriorthents are on ridge tops and sideslopes. The profile for this soil is similar to that described for the soil family, except the surface is more sandy. Ramshorn soil is in small, entrenched winding draws. The profile is similar to that described for the series, except the surface is gravelly sandy loam. Rock outcrop of andesite, dacite and tuffs are on either side of the draws and on some of the higher hilltops.

The vegetation on the Nuc soil and Xeric Torriorthents consists of black sagebrush, juniper, ephedra, rabbitbrush, Indian ricegrass, and squirreltail. The Ramshorn soil supports a vegetative cover of big sagebrush, rabbitbrush, squirreltail and a few juniper trees. The Rock outcrop is essentially barren.

The runoff is medium for the Nuc soil and Xeric Torriorthents. The erosion hazard is moderate for Nuc soil, and the Xeric Torriorthents; and slight to moderate for Ramshorn.

similar to that described for the soil family, except the vertical is more nearly. Permeability soil is it small, entrenched riffle gleam. The profile is similar to that described for the series, except the entrance is gravelly sandy loam. Rock outcrop or sandstone, dacite and quite are on either side of the creek and on some of the higher hillside.

The vegetation on the Lios soil and Xeric Torriorthents consists of pinon sagebrush, juniper, ephedra, Indian ricegrass, and bunchgrass. The Permeability soil supports a sagebrush cover of pinon sagebrush, ephedra, Indian ricegrass, and a few juniper trees.

The soil moist is medium to the Mue soil and Xeric Torriorthents.

The Mue soil is on ridges tops. The profile is similar to that described for the series, except the sample portion is fainter and there is more gravel of flow rock origin. The Xeric Torriorthents are on ridges tops and argosalepes.

Mue-Xeric Torriorthents association (45).--This association occupies as fine-textured-shaped areas in narrow valley bottoms. It consists of 35 percent Mue very gravelly loam, 4 to 15 percent Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow very gravelly sandy loam, 4 to 15 percent slopes; 15 percent Permeability gravelly sandy loam, 5 to 8 percent slopes; and 15 percent rock outcrop. Included are spots 15 percent Xeric Torriorthents on side flood plains, and loamy-skeletal Xerolls on flat benches, terraces, and alluvial fans. The Permeability soil supports a sagebrush cover of pinon sagebrush, ephedra, Indian ricegrass, and bunchgrass. The profile is similar to that described for the soil family, except the entrance is more steeply. Permeability soil is it small, entrenched riffle gleam. Rock outcrop of sandstone, dacite and quite are on either side of the creek and on some of the higher hillside.

The vegetation on the Lios soil and Xeric Torriorthents consists of pinon sagebrush, juniper, ephedra, Indian ricegrass, and bunchgrass. The Permeability soil supports a sagebrush cover of pinon sagebrush, ephedra, Indian ricegrass, and a few juniper trees.

The soil moist is medium to the Mue soil and Xeric Torriorthents.

The Mue soil is on ridges tops. The profile is similar to that described for the series, except the sample portion is fainter and there is more gravel of flow rock origin. The Xeric Torriorthents are on ridges tops and argosalepes.

Mue-Xeric Torriorthents association (45).--This association occupies as fine-textured-shaped areas in narrow valley bottoms. It consists of 35 percent Mue very gravelly loam, 4 to 15 percent Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow very gravelly sandy loam, 4 to 15 percent slopes; 15 percent Permeability gravelly sandy loam, 5 to 8 percent slopes; and 15 percent rock outcrop. Included are spots 15 percent Xeric Torriorthents on side flood plains, and loamy-skeletal Xerolls on flat benches, terraces, and alluvial fans. The Permeability soil supports a sagebrush cover of pinon sagebrush, ephedra, Indian ricegrass, and bunchgrass. The profile is similar to that described for the soil family, except the entrance is more steeply. Permeability soil is it small, entrenched riffle gleam. Rock outcrop of sandstone, dacite and quite are on either side of the creek and on some of the higher hillside.

The vegetation on the Lios soil and Xeric Torriorthents consists of pinon sagebrush, juniper, ephedra, Indian ricegrass, and bunchgrass. The Permeability soil supports a sagebrush cover of pinon sagebrush, ephedra, Indian ricegrass, and a few juniper trees.

The soil moist is medium to the Mue soil and Xeric Torriorthents.

The Mue soil is on ridges tops. The profile is similar to that described for the series, except the sample portion is fainter and there is more gravel of flow rock origin. The Xeric Torriorthents are on ridges tops and argosalepes.

Nuc-Xerollic Haplargids association (65).--This association occurs as irregular-shaped areas in narrow valleys. It consists of 60 percent Nuc very gravelly loam, 4 to 15 percent slopes; and 25 percent Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow gravelly silty clay loam, 15 to 30 percent slopes. Included are about 15 percent shale outcrops on some of the steeper sideslopes; Xerertic Camborthids on gently sloping hills and sideslopes; and Ramshorn soils along some drainageways.

The Nuc soil is on moderately sloping ridge tops and strongly sloping sideslopes. The profile is similar to that described for the series, except the C horizon is more strongly cemented. The Xerollic Haplargids are on moderately steep sideslopes where the original limestone alluvium has been eroded. The profile is similar to that described for the soil family, except there are a few limestone cobbles and gravel on the surface and the color is less red.

Vegetation on Nuc soil is black sagebrush, shadscale, rabbitbrush, ephedra, Indian ricegrass and squirreltail. The vegetation on the Xerollic Haplargids is juniper, pinyon pine, black sagebrush, and squirreltail.

The Nuc soil and Xerollic Haplargids have medium runoff, and slight to moderate erosion hazard.

Papoose Series

The Papoose series are gently sloping soils that formed in old alluvial fans mainly from dacite, basalt and tuffs. The vegetation consists of a sparse cover of shadscale, spiny hopsage, Bailey greasewood, rabbitbrush, horsebrush, bud sagebrush and galleta grass. They are at elevations of 5,000 to 5,400 feet where the mean annual precipitation is about 8 inches; mean annual air temperature is 48° to 49° F.; and the frost-free season is about 120 days. Papoose soils are in Area 7 north of Duckwater.

Typical Papoose soil profiles have a sequence of four main parts: (1) a surface layer of pale brown gravelly sandy loam, 3 inches thick; (2) a very pale brown gravelly sandy clay loam layer, 8 inches thick; (3) a very pale brown gravelly sandy loam layer about 27 inches thick; and (4) very pale brown very gravelly loamy sand that extends to 60 inches.

Papoose soils are well drained. They have moderately rapid permeability. The available water capacity is low. Runoff is slow, and the erosion hazard is moderate.

These soils are used for livestock grazing, recreation, and wildlife habitat.

A representative profile of Papoose gravelly sandy loam, 2 to 4 percent slopes, rangeland, is in Nye County, Nevada in the southeast part of Area 7 at a site about 0.6 mile south, 0.2 mile west of the northeast corner of section 19, T. 13 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; weak fine platy structure; slightly hard, very friable, nonsticky, nonplastic; few root crowns; common fine vesicular pores; 25 percent gravel, very few cobbles; weakly effervescent; moderately alkaline; abrupt smooth boundary.

B21t--3 to 11 inches, very pale brown (10YR 7/3) gravelly sandy clay loam, light yellowish brown (10YR 6/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine thru coarse roots; common very fine and fine tubular and interstitial pores; 15 percent gravel; strongly effervescent; few lime coatings on lower side of gravel; moderately alkaline; clear smooth boundary.

C1ca--11 to 38 inches, very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky, nonplastic; few fine thru coarse roots; common very fine and fine tubular and interstitial pores; 25 percent gravel; strongly effervescent; gravel partly lime coated; moderately alkaline; clear smooth boundary.

IIC2--38 to 60 inches, very pale brown (10YR 7/3) very gravelly loamy sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky, nonplastic; very few fine roots; common very fine and fine tubular and interstitial pores; 60 percent gravel, 5 percent cobbles; strongly effervescent; moderately alkaline.

The depth to the Cca horizon is 10 to 16 inches. The argillic horizon averages gravelly sandy clay loam in texture with 20 to 25 percent clay and 15 to 30 percent by volume gravel. Very gravelly horizons are common below 30 inches. The soil has hue of 10YR, value of 6 to 7 and chroma of 3 or 4.

Papoose gravelly sandy loam, 2 to 4 percent slopes (66).--This soil occurs in irregular-shaped areas on old smooth alluvial fans on either side of the Duckwater Creek flood plain. The profile for this soil is the same as that described for the series. Included are about 15 percent Papoose soils with slopes of 4 to 8 percent on a few fan sideslopes; and Typic Camborthids that are very gravelly and have weakly cemented limy horizons on a few fan crests.

The runoff is slow, and the erosion hazard is moderate.

Pedoli Series*

The Pedoli series are gently to moderately sloping soils that formed on old alluvial fans from various volcanic and sedimentary sources. The vegetation consists of big sagebrush, rabbitbrush, squirreltail, Great Basin wildrye, and juniper. They are at elevations of 6,300 to 6,800 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 44° to 45° F.; and the frost-free season is 90 to 100 days. These soils are in Area 2.

Typical Pedoli soil profiles have a sequence of three main parts: (1) a pale brown gravelly sandy loam surface layer about 3 inches thick; (2) a brown and light yellowish brown gravelly sandy clay loam and heavy sandy loam layer about 24 inches thick; and (3) a very pale brown gravelly sandy loam layer that extends to at least 60 inches.

These soils are well drained and have moderately slow permeability. Available water capacity is moderate. Runoff is slow, and the erosion hazard is slight to moderate.

Pedoli soils are used for livestock grazing, recreation, and wildlife habitat.

*Taxadjunct to the series - Classification is the same as for the series. These soils have moderately alkaline A horizons and some pedons have less than 25 percent clay in the argillic horizon which is outside the range of the Pedoli series.

Report Series

The Report Series are largely to implement policy and are distributed to the Board of Directors, Executive Committee, and Advisory Committee. Other persons may receive them on request.

These series are well printed and have consistently high standards of quality. Available space is rarely used to capacity. Format is 8½" x 11", and length ranges from 50 to 100 pages. There are at present 5 different series, each with its own color of cover and type of paper.

(1) A basic report directly under the authority of the Board of Directors, usually dealing with matters of broad policy. Examples are annual reports, reports on the Federal Reserve System, and reports on the banking structure.

(2) A report dealing with a subject of continuing importance, usually prepared by the staff of the Board of Governors. Examples are reports on bank holding companies, reports on the discount mechanism, and reports on the Federal Reserve's relationship to the Treasury.

(3) A report dealing with a subject of current importance, usually prepared by the staff of the Board of Governors. Examples are reports on bank mergers, reports on the discount mechanism, and reports on the Federal Reserve's relationship to the Treasury.

(4) A report dealing with a subject of current importance, usually prepared by the staff of the Federal Reserve Banks. Examples are reports on bank mergers, reports on the discount mechanism, and reports on the Federal Reserve's relationship to the Treasury.

(5) A report dealing with a subject of current importance, usually prepared by the staff of the Federal Reserve Banks. Examples are reports on bank mergers, reports on the discount mechanism, and reports on the Federal Reserve's relationship to the Treasury.

Federal Reserve Bulletin

The Federal Reserve Bulletin is published monthly. It contains articles on subjects relating to the Federal Reserve System and to financial and business conditions generally. The Bulletin also includes statistical series, reviews of current developments, and legislation affecting the Federal Reserve System. Occasionally, the Bulletin publishes the addresses of officials and staff members. Subscriptions are sold at $5.00 per year or $1.00 per copy. Group subscriptions for 10 or more copies are sold at $4.00 per year or 40 cents per copy. Foreign subscriptions are $6.00 per year or 50 cents per copy. Remittance should be made payable to the Board of Governors and should be sent with the order. Checks and drafts in excess of $100 should be certified. Bulletins are sent to the publication mailing list about the middle of the month.

A representative profile of Pedoli gravelly sandy loam, 2 to 8 percent slopes, rangeland, is in White Pine County, Nevada at a site in Area 2 about 400 feet east on main trail from its junction with a north-south trail; 0.4 mile south, 0.5 mile west of the northeast corner of section 26, T. 16 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine platy structure; soft, very friable, nonsticky, nonplastic; very few fine and medium roots; few root crowns; common fine vesicular pores; 30 percent gravel; moderately alkaline; abrupt smooth boundary.

B21t--3 to 13 inches, brown (10YR 5/3) gravelly sandy clay loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky, plastic; common fine to coarse roots; common fine interstitial and tubular pores; 20 percent gravel; common clay films and bridging of sand grains; moderately alkaline; clear smooth boundary.

B22t--13 to 27 inches, light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; few fine to coarse roots; common fine tubular and interstitial pores; 15 percent gravel; few clay films; moderately alkaline; clear smooth boundary.

Clsica--27 to 60 inches, very pale brown (10YR 7/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; very few fine roots; common fine tubular and interstitial pores; 25 percent gravel, 3 percent cobbles; common lime films; gravel is thinly coated with lime; few nodules that are hard dry and slake in water; violently effervescent; moderately alkaline.

The solum thickness and depth to the Cca horizon is 22 to 30 inches. The percent of gravel ranges from 10 to about 30 percent. The A horizon has hue of 10YR, value of 6 or 7 and chroma of 2 thru 4. The texture is gravelly sandy loam or loam. The Bt horizon has hue of 7.5YR or 10YR, value of 4 thru 6 and chroma of 3 or 4. The texture is gravelly sandy loam, clay loam or sandy clay loam with 18 to 30 percent clay. The C horizon has hue of 10YR, value of 5 thru 8 and chroma of 2 thru 6. The texture ranges from gravelly loamy sand to sandy loam. There is 1 to 3 percent segregated lime.

The Pedoli series have been mapped only as a component soil in the Buster-Pedoli association (38).

the Hudson-Fenoki association (38).

Penoyer Series

The Penoyer series are nearly level soils that formed in silty alluvium. The vegetation consists of halogeton and other weeds. There are a few big sagebrush plants along channels. They are at elevations of 5,000 to 5,200 feet where the mean annual precipitation is about 8 inches; mean annual air temperature is 50° to 51° F.; and the frost-free season is 100 to 120 days. Penoyer soils are in Area 7.

Typical Penoyer soil profiles have a sequence of four main parts: (1) a very pale brown silty clay loam surface layer about 3 inches thick; (2) a brown to pale brown silt loam layer about 19 inches thick; (3) a pale brown very fine sandy loam layer about 26 inches thick; and (4) a pale brown sandy loam layer that extends to 65 inches.

Penoyer soils are well drained and have moderately slow permeability. Available water capacity is high. The runoff is slow, and the erosion hazard is moderate. They are subject to occasional flooding.

These soils are used for livestock grazing, recreation and wildlife habitat.

A representative profile of Penoyer silty clay loam, 0 to 2 percent slopes, rangeland, is at a site about one-half mile north of the Duckwater Indian Reservation near the center of the Duckwater Creek flood plain about 0.5 mile west, 0.65 mile south of the northeast corner of section 19, T. 13 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A--0 to 3 inches, very pale brown (10YR 7/3) silty clay loam, brown (10YR 4/3) moist; weak fine platy structure; hard, friable, sticky, plastic; few root crowns; common very fine and fine vesicular pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C1--3 to 8 inches, brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, slightly sticky, slightly plastic; many very fine and fine roots; few very fine interstitial pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C2--8 to 22 inches, pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky, slightly plastic; common very fine roots; common very fine tubular and interstitial pores; strongly effervescent; moderately alkaline; clear smooth boundary.

C3--22 to 48 inches, pale brown (10YR 6/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; very few very fine roots; common very fine tubular and interstitial pores; few thin strata of silt loam; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C4--48 to 65 inches, pale brown (10YR 6/3) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; very few very fine roots; common very fine tubular and interstitial pores; 5 percent gravel; few strata of loamy sand up to 6 inches thick; few strata of silt loam 1/4 to 3 inches thick; strongly effervescent; moderately alkaline.

The control section averages silt loam or very fine sandy loam in texture with 10 to 18 percent clay and less than 15 percent fine sand or coarser. The hue is 10YR, value is 5 thru 7 and chroma is 3 or 4. Gravelly or very gravelly loamy sand is under many pedons below 40-inch depth.

Penoyer silty clay loam, 0 to 2 percent slopes (67).--This soil occurs in long, narrow bands on flood plain. Only one area immediately north of Duckwater has been mapped. The profile is the same as that described for the series. Included are about 10 percent Bylo soils along the outer margins of the flood plains, and coarse-loamy Typic Torriorthents along shallow channels.

The soil has slow runoff, and the erosion hazard is moderate.

Poorma Series

The Poorma series are nearly level to gently sloping soils that formed in alluvium primarily from limestone and shale. The vegetation consists of big sagebrush, Great Basin wildrye, and rabbitbrush with a few miscellaneous forbs. They are at elevations of 6,000 to 6,600 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is about 100 days. They are in Area 1.

A typical Poorma soil profile has a sequence of three main parts: (1) a light brownish gray very fine sandy loam surface layer about 8 inches thick; (2) a light brown silt loam layer about 8 inches thick; and (3) a very pale brown silt loam layer that extends to at least 56 inches.

Poorma soils are well drained and have moderate permeability. Available water capacity is high. Runoff is slow to medium, and the erosion hazard is slight to moderate. They are subject to occasional flooding.

These soils are used to provide grazing for livestock and wildlife habitat.

A representative profile of Poorma very fine sandy loam, 0 to 4 percent slopes, rangeland, is in Area 1 in White Pine County, Nevada at a site approximately 2,600 feet north and 300 feet west of the apparent southeast corner of section 23, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 8 inches, light brownish gray (10YR 6/2) very fine sandy loam, dark yellowish brown (10YR 3/4) moist; massive; very soft, very friable, nonsticky, nonplastic; root crowns; many very fine and fine interstitial pores; strongly effervescent; strongly alkaline; abrupt smooth boundary.

B2--8 to 16 inches, light brown (7.5YR 6/4) silt loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common fine and medium roots; many very fine and fine interstitial, and few very fine tubular pores; strongly effervescent; strongly alkaline; abrupt smooth boundary.

C1si--16 to 40 inches, very pale brown (10YR 7/3) silt loam, brown (7.5YR 4/4) moist; massive; hard, friable, nonsticky, slightly plastic; few fine and very fine roots; many very fine and fine interstitial pores; 30 to 50 percent durinodes; strongly effervescent; strongly alkaline; abrupt smooth boundary.

C2si--40 to 56 inches, very pale brown (10YR 7/3) silt loam, brown (7.5YR 4/4) moist; massive; soft, friable, nonsticky, slightly plastic; many micro roots; many very fine and fine interstitial pores; strongly effervescent; strongly alkaline.

Thickness of the solum ranges from 12 to 22 inches. The A horizon has hue of 10YR, value of 6 or 7 dry and 2 or 3 moist, and chroma of 2 to 4. It is massive or has weak or moderate thin medium platy structure. Consistence is soft or slightly hard when dry. The B2 horizon has hue of 7.5YR or 10YR, value of 6 or 7 dry and 4 or 5 moist, and chroma of 3 or 4. Textures are silt loam or fine sandy loam. The C horizon has hue of 10YR or 7.5YR, value of 6 to 8 dry and chroma of 3 or 4. The C horizon contains 30 to 35 percent durinodes.

Poorma very fine sandy loam, 0 to 4 percent slopes (68).--This soil occurs as elongated areas on alluvial flood plains. The soil has a profile the same as that described for the series. Included are about 5 percent Nark and Lien soils.

Runoff is slow to medium, and the erosion hazard is slight to moderate.

moderate.

Rarely is also to smaller, and the erosion lasts it might to about 2 percent very and like soils.

A toilis the area as that described for the series: Included are soil occurs as eluviated areas on hilly to level bench terms. The soil has a profile like that described for the series; however, it is about 5 percent gravelly and like soils.

Forces very fine sandy loam, 0 to 4 percent slopes (B3).--This soil occurs as isolated areas on hilly to level bench terms. The soil has a profile like that described for the series; however, it is about 5 percent gravelly and like soils.

Included in this forms ranges from 15 to 35 inches. The A horizon has one of IOYR 6/2 or 6/3 dry and 5 or 3 moist, and color 5 to 4. If is necessary to use of soluble fine sandy loam or loamy very fine sand structure. Consistence is soft or slightly hard when dry, the B2 horizon has one of 7.5YR or IOYR, value of 6 or 7 dry and 4 or 2 moist, and chroma of 3 or 4. Textures are silt loam or fine loamy very fine sandy loam. The C horizon has one of IOYR or 7.5YR, value of 4 to 6 dry and chroma of 3 or 4. The C horizon contains 30 to 35 percent unidentified gravel--40 to 50 inches. Very hard brown (IOYR 7/4) silt loam, brown (7.5YR 4/4) moist; massive; soft; friable; nonplastic; slightly effervescent; mean white coats; many very fine and fine interstitial pores; strongly alkaline; gradual smooth boundary.

ALKALINE.

Portmount Series

The Portmount series are nearly level to moderately sloping soils that formed in old alluvial fans from andesite, dacite, basalt, tuffs, and small amounts of sedimentary rock. The vegetation consists mainly of big sagebrush, and some Indian ricegrass and squirreltail. They are at elevations of 6,000 to 6,700 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 46° to 48° F.; and the frost-free season is 100 to 120 days.

Typical Portmount soil profiles have a sequence of three main parts: (1) a yellowish brown surface layer that is gravelly loamy sand in the upper part and sandy loam in the lower part that is about 3 inches thick; (2) a pale brown sandy clay loam or heavy sandy loam layer about 9 inches thick; and (3) a light yellowish brown and white gravelly sandy loam layer that extends to at least 60 inches.

These soils are well drained and have moderate permeability. Available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate.

Portmount soils are used for livestock grazing and wildlife habitat.

A representative profile of Portmount very gravelly loamy sand, 2 to 4 percent slopes, rangeland, is in Nye County, Nevada at a site about 1,000 feet east of the west quarter corner of section 13, T. 10 N., R. 53 E., or at a crossroads about 3.5 miles northeast of main graded road across Sand Springs Wash.

(Colors are for dry soil unless otherwise noted).

A11--0 to 1 inch, yellowish brown (10YR 5/4) very gravelly loamy sand, dark brown (10YR 3/3) moist; single grained; loose, very friable, nonsticky, nonplastic; few coarse roots; common very fine interstitial pores; about 60 percent by volume medium and coarse gravel; moderately alkaline; abrupt smooth boundary.

A12--1 to 3 inches, pale brown (10YR 6/3) sandy loam, dark brown (10YR 3/3) moist; weak fine platy structure; soft, very friable, slightly sticky, slightly plastic; few medium and coarse roots; common fine and very fine vesicular pores; about 10 percent by volume fine, medium and coarse gravel; moderately alkaline; abrupt smooth boundary.

B2t--3 to 12 inches, pale brown (10YR 6/3) heavy sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, sticky, plastic; common clay films; common fine, medium and coarse roots; common fine interstitial and tubular pores; about 10 percent by volume fine and very fine gravel; moderately alkaline; clear wavy boundary.

IIB3t--12 to 34 inches, light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky, nonplastic; few patchy clay films; common fine and medium roots; common fine interstitial and tubular pores; about 40 percent by volume fine, medium and coarse gravel, gravel is lime coated; noneffervescent to strongly effervescent; moderately alkaline; clear wavy boundary.

IIC2ca--34 to 60 inches, white (10YR 8/2) gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; few fine and medium roots; common interstitial and tubular pores; about 20 percent by volume fine and very fine gravel; violently effervescent; moderately alkaline.

Thickness of the solum ranges from 26 to 38 inches. The texture os the A11 horizon ranges from loamy sand to very gravelly loamy sand or sandy loam. Some pedons have a few cobbles on and in the profile. Loamy sand is mounded 2 to 3 inches under plants and may be missing in places between plants. The texture of the A12 horizon varies from sandy loam to loam. Hue is 10YR, value is 6 and chroma is 3 or 4. The texture of the argillic horizon ranges from light sandy clay loam to heavy sandy loam. Hue is 10YR, value is 6 and chroma is 3 or 4. The texture of the calcic horizon ranges from gravelly sandy loam to gravelly loam. Hue is 10YR, value is 7 to 8 and chroma is 3 thru 4.

Portmount loamy sand, 0 to 2 percent slopes (69).--This soil occurs only in one small, irregular-shaped area on old, smooth alluvial fans. The profile is similar to that described for the series, except the surface is not gravelly, the B2t horizon is less clayey, and the depth to the ca horizon is deeper. Included is about 15 percent Abgese soils that have a subsoil of sandy clay loam.

The vegetation is big sagebrush, rabbitbrush, and Indian ricegrass.

Runoff is medium, and the erosion hazard is moderate.

Ramshorn Series

The Ramshorn series are gently sloping to moderately sloping, slightly convex, gravelly soils on narrow flood plains and alluvial fans. They formed in alluvium mainly from limestone. The vegetation consists of big sagebrush, winterfat, rabbitbrush, Indian ricegrass, and squirreltail. They are at elevations of 6,000 to 6,800 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 43° to 45° F.; and the frost-free season is about 90 days. Ramshorn soils occur in Areas 1, 2, 6, and 15.

Typical Ramshorn soil profiles have a sequence of three main parts: (1) a light gray very gravelly loam surface layer about 2 inches thick; (2) a pale brown gravelly loam about 9 inches thick; and (3) a very pale brown to pale brown, stratified very gravelly loam that extends to 65 inches.

Ramshorn soils are well drained. They are moderately permeable in the upper part and have rapid permeability in the lower part. Available water capacity is low. Runoff is medium, and the water erosion hazard is slight to moderate.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Ramshorn very gravelly loam, 2 to 8 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site about 0.1 mile south, 0.15 mile west of the northeast corner of section 16, T. 10 N., R. 59 E., or 0.7 mile northeast of Manzone Well on the north side of a small alluvial fan.

(Colors are for dry soil unless otherwise noted).

A11--0 to 2 inches, light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; weak fine platy structure; slightly hard, very friable, slightly sticky, slightly plastic; few fine roots; many fine vesicular pores; about 50 percent by volume fine limestone gravel, about 10 percent by volume limestone cobbles; violently effervescent; moderately alkaline; abrupt smooth boundary.

A12--2 to 4 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable, slightly sticky, slightly plastic; few fine and medium roots; common fine interstitial pores; about 35 percent by volume limestone gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

C1--4 to 11 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; common fine and medium roots; many fine interstitial and tubular pores; about 35 percent by volume limestone gravel, lime coated on the lower side; violently effervescent; moderately alkaline; clear smooth boundary.

C2--11 to 16 inches, pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; common fine and medium roots; many fine interstitial and tubular pores; about 65 percent by volume limestone gravel, lime coated on the lower side; violently effervescent; moderately alkaline; abrupt smooth boundary.

C3ca--16 to 29 inches, pale brown (10YR 6/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; soft, friable, slightly sticky, slightly plastic; layers 1 to 3 inches thick are hard; few fine and medium roots; common fine tubular pores; about 50 percent by volume lime coated gravel; violently effervescent; moderately alkaline; clear wavy boundary.

C4ca--29 to 50 inches, very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, slightly sticky, slightly plastic; few fine roots; few fine tubular pores; about 80 percent by volume lime coated limestone gravel, few cobbles; violently effervescent; moderately alkaline; clear wavy boundary.

C5--50 to 65 inches, very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; soft, friable, slightly sticky, slightly plastic; very few fine roots; common fine tubular pores; about 65 percent by volume limestone gravel, lime coated on lower side; violently effervescent; moderately alkaline.

The control section contains 35 to about 85 percent by volume limestone gravel and cobbles. Secondary calcium carbonate occurs in the C horizons as coatings on gravel and as films and soft masses but not enough to meet requirements of a calcic horizon. The texture of all horizons is gravelly or very gravelly loam, clay loam or sandy clay loam with 8 to 25 percent clay. Hue is 10YR, values of 5 thru 7 and chromas of 2 thru 4.

Ramshorn series have been mapped only as a component soil in the Bylo-Ramshorn association (44); Durorthidic Xeric Torriorthents-Ramshorn association (47); Nuc-Xeric Torriorthents association (64); and the Xerollic Durargids-Ramshorn association (80). In map units (44) and (64) surface textures are gravelly sandy loam; in unit (47) the surface texture is a very gravelly loam. Ramshorn series in map units (44) and (64) are more sandy throughout the profile than is typical for the series in this survey.

Rock outcrop

Rock outcrop is a miscellaneous land type. It consists of limestone, quartzite, tuffs, or volcanic flow rock. It lacks vegetation except in fractures, and has no agricultural value.

Rock outcrop has been mapped only as a component miscellaneous land type in the Hopeka-Rock outcrop complex (55); Nuc-Xeric Torriorthents association (64); and Typic Camborthids-Rock outcrop association (70).

host organism

Typic Camborthids, loamy-skeletal, mixed, mesic

The soils in the area representing this soil family are moderately steep. They have formed in colluvium from quartzite with small additions of alkaline windblown dust. The vegetation consists of black sagebrush, phlox, rabbitbrush, squirreltail, Indian ricegrass, and blue grama. Elevations range from 6,500 to 6,700 feet. The mean annual precipitation is about 8 inches; mean annual air temperature is 44° to 47° F.; and the frost-free season is 100 to 120 days. This soil is in Area 8 in Little Smoky Valley.

Typical soil family profiles are very pale brown to pale brown gravelly, cobbly, and stony fine sandy loam which extends to more than 40 inches.

These soils are well drained and have moderate permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

The principal uses of the soils are livestock grazing and wildlife habitat.

type composition, loamy-skeletal, mixed, mesic

The soils in the area represented this soil family are moder-

ately slowly permeable in the lower horizons and have moderate permeability.

These soils are well drained and have moderate permeability.

available water capacity is low. Runoff is medium, and the erosion

hazard is slight to moderate.

The principal uses of the soils are livestock grazing and wildlife habitat.

A representative profile of Typic Camborthids, loamy-skeletal, mixed, mesic, very stony fine sandy loam, 15 to 30 percent slopes is in the northeastern part of Area 8 at a site about 0.4 mile west, 0.9 mile south of the northeast corner of section 18, T. 13 N., R. 53 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) very stony and gravelly fine sandy loam, dark brown (10YR 3/3) moist; weak fine platy structure; soft, friable, slightly sticky, slightly plastic; few fine to coarse roots; few root crowns; common very fine vesicular pores; 50 percent gravel, 10 percent cobbles, 5 percent stones; strongly effervescent; moderately alkaline; abrupt smooth boundary.

B2--3 to 11 inches, pale brown (10YR 6/3) gravelly and cobbly fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly plastic; common fine thru coarse roots; common very fine and fine interstitial and tubular pores; 15 percent gravel, 20 percent cobbles, 10 percent stones; lime coatings on lower side of coarse fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

C1sica--11 to 17 inches, very pale brown (10YR 7/3) gravelly and cobbly fine sandy loam, yellowish brown (10YR 5/4) moist; massive, slightly hard, friable, slightly sticky, slightly plastic; few fine thru coarse roots; few very fine and fine interstitial and tubular pores; 20 percent gravel, 25 percent cobbles, 10 percent stones; about 25 percent of the soil mass is very weakly silica cemented; lower side of coarse fragments are silica-lime coated; violently effervescent; moderately alkaline; clear smooth boundary.

C2--17 to 40 inches, pale brown (10YR 6/3) gravelly and cobbly fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, friable, slightly sticky, slightly plastic; few fine thru coarse roots; few very fine and fine interstitial and tubular pores; 15 percent gravel, 35 percent cobbles, 10 percent stones; violently effervescent; moderately alkaline.

The thickness of the solum is 8 to 14 inches. The 10 to 14 inch control section averages 10 to 15 percent clay in the fine earth fraction, and 45 to 60 percent by volume coarse fragments. The soil has hue of 10YR, value of 5 thru 7 and chroma of 3 or 4.

Typic Camborthids-Rock outcrop association (70).--This association occurs in one small, oblong area. It consists of about 65 percent Typic Camborthids, loamy-skeletal, mixed, mesic, very stony fine sandy loam, 15 to 30 percent slopes; and about 25 percent quartzite Rock outcrop. Included are about 10 percent loamy-skeletal Typic Torriorthents that are shallow over quartzite.

This unit is characterized by a sharply rising ridge of quartzite and moderately steep colluvium surrounding the quartzite. It is surrounded by Abgese and Yody soils. The profile is the same as that described for the soil family. The Rock outcrop has no agricultural value, and is similar to that described for the Rock outcrop miscellaneous land type.

The runoff for the Typic Camborthids is medium, and the erosion hazard is slight to moderate.

Tuffaceous fanglomerate.

Tuffaceous fanglomerate is medium- and thin-bedded to massive, and the exposures are small, although rare. It consists of about 65 percent accretionary lapilli, pumice fragments, and ash. Rock fragments are rare. Very little sorting is apparent. The matrix is clay to fine ash. Fragments are subangular to subrounded. The rock contains 25 to 30 percent pumice; and about 15 percent dacite rock fragments, 5 to 10 percent quartz-crystal fragments, and 5 percent plagioclase crystals. Included are small volcanic bombs.

Tuffaceous fanglomerate is characterized by a variety of constituents that are smaller than those of the tuffaceous breccia. It is distinguished by its massive, nonstratified appearance and poorly sorted coarse fragments. The breccia is also more resistant to erosion. The rock contains more or less fragments of dacite porphyry and pumice. Fragments are subangular to angular, and it is similar to that described for the rock outcrop mixed-fragment volcanic breccia (57).--The association

Typic Camborthids, coarse-loamy, mixed, mesic

The soils in the area representing this soil family are gently sloping to moderately sloping. They have formed in old alluvial fans from volcanic flow rock, tuffs, and shale. The vegetation consists of shadscale, Indian ricegrass, rabbitbrush, halogeton, and prickly pear cactus. They are at elevations of 6,000 to 6,600 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 44° to 47° F.; and the frost-free season is 100 to 120 days. They are in Area 9.

Typical soil family profiles have a sequence of two main parts: (1) a pale brown gravelly loam surface layer about 7 inches thick; and (2) a pale brown to light yellowish brown, stratified substrata of gravelly sandy loam to sandy clay loam that extends to more than 48 inches.

These soils are well drained and have moderately slow permeability. Available water capacity is moderate. Runoff is medium, and the erosion hazard is slight to moderate.

They are used for livestock grazing and wildlife habitat.

A representative profile of Typic Camborthids, coarse-loamy, mixed, mesic, gravelly loam, 2 to 8 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area approximatley 600 feet south of the north quarter corner of section 13, T. 11 N., R. 54 E., or 3.2 miles south of Portugese Springs.

(Colors are for dry soil unless otherwise noted).

A11--0 to 3 inches, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak fine platy structure; soft, friable, slightly sticky, slightly plastic; few fine, medium and coarse roots: common fine vesicular pores; 15 percent by volume gravel; moderately alkaline, abrupt wavy boundary.

B2--3 to 7 inches, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; common fine, medium and coarse roots; few fine tubular and interstitial pores; 25 percent by volume fine gravel; weakly effervescent; moderately alkaline; abrupt smooth boundary.

C1ca--7 to 17 inches, pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, nonplastic; common fine, medium and coarse roots; few fine tubular and interstitial pores; 25 percent by volume fine and very fine lime-coated gravel; violently effervescent; moderately alkaline; abrupt wavy boundary.

C2--17 to 40 inches, pale brown (10YR 6/3) shaly sandy loam, dark brown (10YR 4/3) moist; massive slightly hard, friable, sticky, plastic; very few fine roots; strongly effervescent; strongly alkaline; abrupt wavy boundary.

C3--40 to 48 inches, light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, sticky, plastic; very few fine roots; pockets of shale fragments; weakly effervescent; strongly alkaline.

Depth of the solum is 5 to 9 inches. The texture of the A and B2 horizons ranges from a sandy loam to gravelly loam. Hue is 10YR, value is 6 to 7 and chroma is 3 or 4. The C horizons may have very weak cementation. There are 5 to 50 percent fine shale fragments. Hue is 10YR, value is 6 and chroma is 3 or 4. They are stratified and vary widely in texture, gravel and shale fragment content.

This soil family has been mapped only as a component soil in the Typic Haplargids-Typic Camborthids association (71).

content.

Mule soil family has been mapped only as a component soil in the Typic Haplustalfs-Typic Camporthids association (17).

Typic Haplargids, fine-loamy, mixed, mesic

The soils in the area representing this Soil Family are gently sloping to moderately sloping. They formed in old alluvial fans from volcanic flow rock, tuffs, shale, and limestone. The vegetation consists of winterfat, spiny hopsage, rabbitbrush, bud sagebrush, and Indian ricegrass. They are at elevations of 6,000 to 6,600 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 44° to 47° F.; and the frost-free season is 100 to 120 days. These soils are in Area 9.

Typical soil family profiles have a sequence of four main parts: (1) a pale brown gravelly sandy loam surface layer about 3 inches thick; (2) a brown heavy sandy loam layer about 7 inches thick; (3) a pale brown and grayish brown stratified sandy loam, very gravelly sandy loam and very gravelly loam about 26 inches thick; and (4) a light yellowish brown clay loam that extends to at least 48 inches.

These soils are well drained. They have moderately slow permeability. Available water capacity is moderate. Runoff is medium, and the erosion hazard is slight.

They are used for livestock grazing and wildlife habitat.

A representative profile of Typic Haplargids, fine-loamy, mixed, mesic, gravelly sandy loam, 2 to 8 percent slopes, rangleand, is in Nye County, Nevada in an unsurveyed area at a site about 1,300 feet east of the southwest corner of section 1, T. 11 N., R. 54 E., or about 2.4 miles southwest of Portugese Springs.

(Colors are for dry soil unless otherwise noted).

A11--0 to 3 inches, pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 4/3) moist; very weak platy structure; soft, very friable, slightly sticky, slightly plastic; few fine, medium and coarse roots; common fine and medium vesicular pores; about 20 percent by volume fine and medium gravel; moderately alkaline; abrupt smooth boundary.

B21t--3 to 7 inches, brown (10YR 5/3) heavy sandy loam, dark brown (10YR 3/3) moist; weak subangular blocky structure; soft, very friable, sticky, plastic; common fine, medium and coarse roots; common fine tubular and interstitial pores; about 10 percent by volume fine, medium and coarse gravel; clay films on some peds; moderately alkaline; abrupt wavy boundary.

B22t--7 to 10 inches, brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak subangular blocky structure; soft, very friable, slightly sticky, slightly plastic; common fine, medium and coarse roots; common very fine and fine tubular and interstitial pores; about 10 percent by volume fine, medium and coarse gravel; clay films on some peds; moderately alkaline; abrupt wavy boundary.

C1ca--10 to 21 inches, pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, nonplastic; common fine, medium and coarse roots; few fine tubular and interstitial pores; about 10 percent by volume fine, medium and coarse gravel violently effervescent; strongly alkaline; abrupt wavy boundary.

C2ca--21 to 29 inches, pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, nonplastic; many very fine, fine, medium and coarse roots; few fine tubular and interstitial pores; about 50 percent by volume fine, medium and coarse gravel; violently effervescent; strongly alkaline; abrupt wavy boundary.

C3--29 to 36 inches, grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; hard, friable, slightly sticky, slightly plastic; very few fine and very fine roots; about 70 percent by volume shale gravel; few lime streaks; effervescent; strongly alkaline; abrupt smooth boundary.

C4--36 to 48 inches, light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, sticky, plastic; very few fine and very fine roots; about 10 percent by volume fine gravel; effervescent; moderately alkaline.

The depth of the solum to the C horizon ranges from 10 to 18 inches. Textures of the A horizon range from gravelly sandy loam to gravelly loam. Hue is 10YR, value is 6 to 7 and chroma is 3. Textures of the argillic horizon are sandy clay loam to sandy loam with a weighted average of 18 to 26 percent clay. Hue is 10YR, value is 5 to 6, and chroma is 3 or 4. The C horizons are stratified very gravelly sandy loam to clay loam. Shale fragments are in some of these strata. Lime pockets or streaks are interspersed through the C horizons. Hue is 10YR, value is 5 thru 7 and chroma is 1 thru 4.

Typic Haplargids-Typic Camborthids association (71).--This association occurs as irregular-shaped areas on old alluvial fans. It consists of about 70 percent Typic Haplargids, fine-loamy, mixed, mesic, gravelly sandy loam, 2 to 8 percent slopes; and about 20 percent Typic Camborthids, coarse-loamy, mixed, mesic, gravelly loam, 2 to 8 percent slopes. Included are about 10 percent loamy-skeletal Typic Camborthids along drainageways, and Portmount soils on fan tops.

The Typic Haplargids are on the alluvial fans, and the Typic Camborthids are adjacent to drainageways that dissect the fans. The profiles are the same as those described for the soil families.

Runoff is medium, and the erosion hazard is slight.

Fabric habitat-fabric components association (IV).—Data

The depth of the soils to the C horizon ranges from 40 to 72 inches. Texture of the A horizon ranges from very stony sandy loam to very gravelly loam. The B horizon is clay loam to gravelly clay loam. Reaction ranges from very strongly acid to medium acid. Included are about 10 percent Fabius soils, 5 to 8 percent stony soils, and Portsmouth soils on less than 5 percent of the association.

The fabric habitat components are adjacent to dissimilar components that affect the use and management of the soils. The components are described for the soil in which they occur.

Fabric habitat components are on the gravelly land, and the fabric components are on the Fabius soils, very stony land, and Portsmouth soils.

Fabric habitat-fabric components association (IV).—Data

Typic Torriorthents, coarse-silty, mixed (calcareous), frigid

The soils in the area representing this soil family are nearly level. They formed on flood plains and alluvial fans from silty alluvium mainly from sedimentary rocks. The vegetation consists primarily of winterfat and a few other shrubs. They are at elevations of 6,300 to 6,500 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is 90 to 100 days. They are in Area 1.

The typical soil family profile is a pale brown to light yellowish brown, silt loam from the surface to at least 60 inches.

These soils are well drained, and have moderate permeability. Available water capacity is high. Runoff is slow, and the erosion hazard is moderate.

They are used to provide grazing for livestock and wildlife habitat.

A representative profile of Typic Torriorthents, coarse-silty, mixed (calcareous), frigid, silt loam, 0 to 2 percent slopes, rangeland, is in White Pine County, Nevada at a site about 2,600 feet east and 300 feet north of the southwest corner of section 1, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 5 inches, pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak very fine platy, and coarse platy structure in spots; soft, very friable, nonsticky, slightly plastic; common fine and few very fine roots; many very fine and fine vesicular pores; moderately alkaline; abrupt smooth boundary.

C1--5 to 22 inches, light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky, slightly plastic; common fine and few very fine roots; many very fine and fine interstitial, and few very fine tubular pores; strongly effervescent; strongly alkaline; clear smooth boundary.

C2--22 to 60 inches, light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; very soft, very friable, slightly sticky, slightly plastic; common very fine and fine roots; many very fine and fine interstitial, and few very fine tubular pores; strongly effervescent; strongly alkaline.

The control section is dominantly silt loam throughout but may contain strata of very fine sandy loam or loam. The soil has hue of 10YR, value of 6 or 7 dry and 4 or 5 moist, and chroma of 3 or 4. The virgin areas have well developed vesicular crusts.

Typic Torriorthents, coarse-silty, mixed (calcareous), frigid, silt loam, 0 to 2 percent slopes (72).--This soil occurs as irregularly-shaped areas on old alluvial flood plains. The soil profile is the same as that described for the soil family. Included are about 5 percent Bylo soils.

These soils are fertile and well suited for irrigated cropland if irrigation water were available.

Runoff is slow, and they are susceptible to moderate erosion. They are subject to rare flooding.

Typic Torriorthents, fine-loamy, mixed (calcareous), mesic

The soils in the area representing this family are nearly level. They formed on flood plains in mixed alluvium from dacite, andesite, tuffs, limestone and shale. The vegetation consists of shadscale, winterfat, fourwing saltbush, spiny hopsage, and Indian ricegrass. They are at elevations of 6,000 to 6,300 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 44° to 48° F.; and the frost-free season is 100 to 120 days. They are in Areas 13 and 14.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown silty clay loam surface layer about 4 inches thick; (2) a pale brown silt loam layer about 26 inches thick; and (3) a yellowish brown gravelly sandy loam layer that extends to at least 60 inches.

These soils are moderately well drained, and have moderately slow permeability. Available water capacity is high. Runoff is slow, and the erosion hazard is moderate.

These soils are used for livestock grazing, recreation, and wildlife habitat.

A representative profile of Typic Torriorthents, fine-loamy, mixed (calcareous), mesic, silty clay loam, 0 to 2 percent slopes, rangeland, is in Nye County, Nevada at a site near the center of Sand Spring Wash about 0.75 mile west and 0.75 mile south of the northeast corner of section 29, T. 11 N., R. 54 E.

(Colors are for dry soil unless otherwise noted).

A--0 to 4 inches, pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; weak fine platy structure; soft, friable, sticky, plastic; few coarse roots and root crowns; common fine and very fine vesicular pores; 3 percent gravel; effervescent; moderately alkaline; abrupt smooth boundary.

C1--4 to 30 inches, pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium platy structure; soft, friable, slightly sticky, slightly plastic; common fine to coarse roots; few fine and very fine interstitial pores; 3 percent gravel; thinly bedded with silty clay loam; strongly effervescent; moderately alkaline; abrupt wavy boundary.

IIC2--30 to 60 inches, yellowish brown (10YR 5/4) gravelly sandy loam; dark yellowish brown (10YR 4/4) moist; massive; soft, friable, nonsticky, nonplastic; very few fine roots; common fine and very fine interstitial and tubular pores; 30 percent gravel; lower part is stratified with very gravelly loamy sand, moderately alkaline.

Depth to the lithologic discontinuity is 17 to 34 inches. The control section averages fine-loamy with the upper part being silt loam and silty clay loam with 24 to 30 percent clay and the lower part stratified gravelly sandy clay loam to very gravelly loamy sand. The upper part of the profile is weakly to strongly effervescent and the lower part is noneffervescent to strongly effervescent. The A horizon has hue of 10YR, value of 5 thru 7, and chroma of 2 or 3. The texture ranges from silt loam to silty clay loam. The C1 horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. The texture ranges from silt loam to silty clay loam. It may be thinly bedded with these textures or be monotextured. The IIC2 horizon has hue of 10YR or 7.5YR, value of 4 thru 6, and chroma of 3 thru 6.

Typic Torriorthents-Bylo association (73).--This association occurs as long, narrow branched areas on flood plains in the lowest part of wide valleys. It consists of 50 percent Typic Torriorthents, fine-loamy, mixed (calcareous), mesic, silty clay loam, 0 to 2 percent slopes; and 35 percent Bylo silt loam, 0 to 2 percent slopes. Included are about 15 percent coarse-loamy and coarse-silty Typic Torriorthents and Typic Camborthids that have a gravelly substrata. The Typic Torriorthents are in the lowest part of the flood plain and are cut by numerous shallow channels. The Bylo soils occupy the major portion of the flood plain adjacent to the Typic Torriorthents. Bylo soils included in this mapping unit are 1 to 2 degrees warmer than is typical for the soil series. The profiles for the two soils comprising this mapping unit are similar to the respective soil family and series.

Shadscale, winterfat, fourwing saltbush, spiny hopsage and Indian ricegrass comprise the major vegetative cover on the Typic Torriorthents. Big sagebrush occurs only along channels on this soil. These soils are fertile but subject to channeling and trenching by flood waters which ponds and passes over them. Bylo soils have vegetative cover consisting primarily of winterfat and halogeton. They are fertile soils and well suited to cultivation if irrigation water is available.

The major soils comprising this soil mapping unit have slow runoff and moderate erosion hazard. They are subject to occasional flooding.

Fig. 1.—(1) Actinomyces-like mycelium from a pure culture on glucose-asparagine agar. (2) Mycelium and spores from a young culture on the same medium. (3) Mycelium and spores from a young culture on glucose-asparagine agar. (4) Mycelium and spores from a young culture on glucose-asparagine agar. (5) Mycelium and spores from a young culture on glucose-asparagine agar. (6) Mycelium and spores from a young culture on glucose-asparagine agar. (7) Mycelium and spores from a young culture on glucose-asparagine agar. (8) Mycelium and spores from a young culture on glucose-asparagine agar. (9) Mycelium and spores from a young culture on glucose-asparagine agar. (10) Mycelium and spores from a young culture on glucose-asparagine agar. (11) Mycelium and spores from a young culture on glucose-asparagine agar. (12) Mycelium and spores from a young culture on glucose-asparagine agar. (13) Mycelium and spores from a young culture on glucose-asparagine agar. 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(66) Mycelium and spores from a young culture on glucose-asparagine agar. (67) Mycelium and spores from a young culture on glucose-asparagine agar. (68) Mycelium and spores from a young culture on glucose-asparagine agar. (69) Mycelium and spores from a young culture on glucose-asparagine agar. (70) Mycelium and spores from a young culture on glucose-asparagine agar. (71) Mycelium and spores from a young culture on glucose-asparagine agar. (72) Mycelium and spores from a young culture on glucose-asparagine agar. (73) Mycelium and spores from a young culture on glucose-asparagine agar. (74) Mycelium and spores from a young culture on glucose-asparagine agar. (75) Mycelium and spores from a young culture on glucose-asparagine agar. (76) Mycelium and spores from a young culture on glucose-asparagine agar. (77) Mycelium and spores from a young culture on glucose-asparagine agar. (78) Mycelium and spores from a young culture on glucose-asparagine agar. (79) Mycelium and spores from a young culture on glucose-asparagine agar. (80) Mycelium and spores from a young culture on glucose-asparagine agar. (81) Mycelium and spores from a young culture on glucose-asparagine agar. (82) Mycelium and spores from a young culture on glucose-asparagine agar. (83) Mycelium and spores from a young culture on glucose-asparagine agar. (84) Mycelium and spores from a young culture on glucose-asparagine agar. (85) Mycelium and spores from a young culture on glucose-asparagine agar. (86) Mycelium and spores from a young culture on glucose-asparagine agar. (87) Mycelium and spores from a young culture on glucose-asparagine agar. (88) Mycelium and spores from a young culture on glucose-asparagine agar. (89) Mycelium and spores from a young culture on glucose-asparagine agar. (90) Mycelium and spores from a young culture on glucose-asparagine agar. (91) Mycelium and spores from a young culture on glucose-asparagine agar. (92) Mycelium and spores from a young culture on glucose-asparagine agar. (93) Mycelium and spores from a young culture on glucose-asparagine agar. (94) Mycelium and spores from a young culture on glucose-asparagine agar. (95) Mycelium and spores from a young culture on glucose-asparagine agar. (96) Mycelium and spores from a young culture on glucose-asparagine agar. (97) Mycelium and spores from a young culture on glucose-asparagine agar. (98) Mycelium and spores from a young culture on glucose-asparagine agar. (99) Mycelium and spores from a young culture on glucose-asparagine agar. (100) Mycelium and spores from a young culture on glucose-asparagine agar.

Unsel Series

These soils have formed on gently sloping, old, alluvial fans from dacite, andesite and tuffs. The vegetation is bud sagebrush, shadscale, halogeton, and scattered big sagebrush. Elevations range from 6,200 to 6,500 feet. The mean annual precipitation is about 8 inches; mean annual air temperature is about 45° to 46° F.; and the frost-free season is about 110 days.

Typical Unsel soil profiles have a sequence of three main parts: (1) a pale brown surface layer of gravelly sandy loam about 3 inches thick; (2) a brown sandy clay loam layer about 18 inches thick; and (3) a very pale brown to pale brown weakly silica-cemented gravelly loam and very gravelly loamy sand that extends to 50 inches.

These soils are well drained and have moderately slow permeability. Available water capacity is moderate. Runoff is medium, and the erosion hazard is slight.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Unsel gravelly sandy loam, 2 to 4 percent slopes, rangeland, is in Nye County, Nevada in the northeastern part of Area 13 at a site approximately 0.35 mile south of the northeast corner of section 17, T. 11 N., R. 54 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure; soft, very friable, slightly sticky, slightly plastic; few root crowns; common very fine and fine vesicular pores; 20 percent gravel, 5 percent cobbles; noneffervesent; strongly alkaline; abrupt smooth boundary.

B21t--3 to 21 inches, pale brown (10YR 6/3) sandy clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine to coarse roots; common fine tubular and interstitial pores; 10 percent gravel, 3 percent cobbles; clay films on faces of peds; noneffervescent; moderately alkaline; abrupt wavy boundary.

C1sica--21 to 26 inches, very pale brown (10YR 8/3) gravelly loam, pale brown (10YR 6/3) moist; massive; hard, firm, nonsticky, nonplastic; few fine and medium roots; common fine tubular and interstitial pores; 25 percent gravel, 3 percent cobbles; discontinuous laminar caps; violently effervescent; strongly alkaline; clear wavy boundary.

IIC2sica--26 to 50 inches, pale brown (10YR 6/3) stratified very gravelly loamy sand, brown (10YR 4/3) moist; massive; very hard, firm, very few fine roots; common fine interstitial pores; 70 percent gravel, 10 percent cobbles; some strata are violently effervescent with much segregated lime; other strata are only weakly effervescent; moderately alkaline.

Thickness of the solum is 16 to 22 inches. In some pedons there is a B3t horizon. The A horizon has hue of 10YR, value of 5 thru 7, and chroma of 2 or 3. The texture is gravelly sandy loam, loam or loamy sand. The Bt horizon has hue of 7.5YR or 10YR, value of 4 thru 6, and chroma of 3 thru 6. The texture is loam, clay loam or sandy clay loam with 20 to 30 percent clay. The stratified horizons are weakly silica-lime cemented.

Unsel gravelly sandy loam, 2 to 4 percent slopes (74).--This soil occurs mostly as irregular-shaped areas on very weakly dissected, broad fans. One area of 968 acres in the extreme northwestern part of Area 13, is long and narrow. The profile is similar to the one described for the series. Included are about 10 percent Abgese soils, and loamy-skeletal Durixerollic Calciorthids.

Runoff is medium, and the erosion hazard is slight.

Xerertic Camborthids, fine, montmorillonitic, frigid

The soils in the area representing this family are moderately sloping to rolling. They formed in thick shale beds in mountainous terrain. The vegetation consists of big sagebrush, rabbitbrush, squirreltail, and Indian ricegrass. They are at elevations of 6,400 to 7,000 feet. The mean annual precipitation is 10 to 12 inches; mean annual air temperature is 42° to 44° F.; and the frost-free season is about 90 days. They are of limited extent and are near Andrew Spring southeast of Currant.

Typical soil family profiles have a sequence of four main parts: (1) a surface layer of dark yellowish brown, soft, calcareous clay about 3 inches thick; (2) a light olive brown very hard calcareous clay about 9 inches thick; (3) a light olive brown very hard calcareous clay mixed with shale about 18 inches thick; and (4) a grayish brown noncalcareous shale that extends to 60 inches.

These soils are well drained, and have very slow permeability. Available water capacity is moderate. The runoff is medium, and the erosion hazard is moderate by water.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Xerertic Camborthids, fine, montmorillonitic, frigid, clay, 4 to 15 percent slopes, rangeland, is in Nye County, Nevada in an unsurveyed area at a site approximately 0.9 mile west, 0.95 miles south of the northeast corner of section 7, T. 8 N., R. 58 E., or about 0.7 mile northwest of Seep Spring.

(Colors are for dry soil unless otherwise noted).

A--0 to 3 inches, dark yellowish brown (10YR 4/4) clay, dark yellowish brown (10YR 4/4) moist; weak fine platy parting to weak fine granular structure; soft, friable, very sticky, very plastic; common fine roots; common very fine vesicular pores; few limestone pebbles; very thin granular surface crust; effervescent; moderately alkaline; abrupt smooth boundary.

B21--3 to 12 inches, light olive brown (2.5Y 5/4) clay, light olive brown (2.5Y 5/4) moist; weak fine and medium blocky structure; very hard, very firm, very sticky, very plastic; common fine and medium roots; few fine tubular pores; very few fine limestone pebbles; many intersecting slickensides and wedge-shaped peds; few fine soft and hard masses of lime; strongly effervescent; moderately alkaline; gradual smooth boundary.

A representative profile of textile communities, times, mort-
monthly, fairly, city, 4 to 12 percent stores, represented, is
an area county. Records in an unusually area at a site approximately
0.4 mile west, 0.55 miles south of the northeast corner of section
7, T. 8 N., R. 28 E., or about 0.1 mile northwest of Deep Spring.
(Before use for dry mill unless otherwise noted).
0--4 to 3 inches, dark yellowish brown (10YR 4\4) clay, dark
yellowish brown (10YR 4\8) moist; weak fine blocky parting
to weak fine granular structure; soft, friable, very brick,
very firebrick; common fine roots; common very fine vesicular
pores; few limestone pebbles; very firm irregular surface
crust; efflorescent; moderately alkaline; sprint smooth
boundary.
3--13 to 15 inches, light olive brown (2.5Y 5\4) clay, light olive
brown (2.5Y 5\4) moist; weak fine and medium blocky struc-
ture; very hard, very firm, very sticky, very plastic;
common fine and medium roots; few fine tubular pores;
very few fine dark limestone pebbles; many interstitial
silicksensloped and weak-sphenoy bone; few fine soft and
hard masses of lime; strongly effervescent; moderately
alkaline; strong smooth boundary.

B22---12 to 30 inches, light olive brown (2.5Y 5/4) clay, light olive brown (2.5Y 5/4) moist; massive; very hard, very firm, very sticky, very plastic; few fine roots; very few fine limestone pebbles; common intersecting slickensides; mixed with shale in the lower part; few fine soft masses of lime and gypsum; effervescent; moderately alkaline; gradual smooth boundary.

C--30 to 60 inches, grayish brown (2.5Y 5/2) to light olive brown (2.5Y 5/4) massive shale; noneffervescent except for a few films of lime in fractures in the upper part of the horizon; moderately alkaline.

Depth to weakly consolidated shale is 20 to 40 inches. When dry, this soil has cracks one-half to one and one-half inches wide in the A and B2 horizons. The control section is clay with 45 to 60 percent clay. The surface texture is typically clay but ranges to heavy clay loam where soil has been deposited from higher lying areas. This soil has hue of 10YR or 2.5Y, values of 4 thru 6, and chromas of 4 thru 6. The underlying shale ranges from effervescent to noneffervescent.

Xerertic Camborthids, fine, montmorillonitic, frigid, clay, 4 to 15 percent slopes (75).--This soil occurs as irregular-shaped areas on moderately sloping to rolling beds of shale. It is tilted at various angles and in places interbedded with sandstone, quartzite, and limestone. The softer shale has eroded away at a faster rate which leaves sharp ridges and rounded hills capped with the harder rock. The soil profile is the same as that described for the soil family. Included are about 15 percent various shallow, cobbly and stony Torriorthents that formed on the hard rocks; Fanu, Ramshorn and other unnamed soils in narrow drainageways that head in limestone mountains, cross the unit and deposit alluvium; and Ansping, Nuc, and similar soils that are in old alluvial fans.

The present vegetation is big sagebrush, rabbitbrush, squirreltail, and some juniper.

The runoff is medium, and the erosion hazard is moderate.

Xerertic Haplargids, clayey, montmorillonitic, frigid, shallow

The soil in the area representing this family are gently sloping to moderately sloping. They have formed in shale on footslopes that receive runoff from higher lying soils. The vegetation consists of big sagebrush, squirreltail, Indian ricegrass, upland sedge, and scattered Utah juniper. They are at elevations of 6,400 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is 90 to 100 days. They occur in Areas 2 and 11.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown clay loam surface layer about 3 inches thick; (2) a brown to yellowish brown clay layer about 15 inches thick; and (3) a massive grayish brown very hard shale that extends to at least 24 inches.

These soils are well drained and have very slow permeability. Available water capacity is moderate. Runoff is medium, and the erosion hazard is slight to moderate.

These soils are used for livestock grazing, recreation, and wildlife habitat.

A representative profile of Xerertic Haplargids, fine, montmorillonitic, frigid, shallow, clay loam, 2 to 8 percent slopes, rangeland, is in White Pine County, Nevada in Area 2 at a site approximately 0.05 mile south, 0.1 mile west of the northeast corner of section 4, T. 15 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A--0 to 3 inches, pale brown (10YR 6/3) clay loam, brown (10YR 4/3 moist; weak fine platy structure; soft, friable, sticky, plastic; very few coarse roots; many fine vesicular pores; 20 percent gravel, 5 percent cobbles; moderately alkaline; abrupt smooth boundary.

B21t--3 to 8 inches, brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; weak coarse blocky structure parting to moderate very fine subangular blocky structure; hard, firm, very sticky, very plastic; many fine to coarse roots; common very fine tubular pores; 8 percent gravel, 5 percent cobbles; moderately alkaline; clear smooth boundary.

B3ca--8 to 18 inches, yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; weak coarse blocky structure; hard, firm, very sticky, very plastic; few fine roots; common very fine tubular pores; 5 percent gravel, 2 percent cobbles; few calcium carbonate coatings; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C--18 to 24 inches, massive grayish brown (10YR 5/2) very hard and very firm shale; few lenses of clay between shale layers; moderately alkaline.

Thickness of the solum and depth to shale is 14 to 20 inches. The A horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 3 or 4. The texture is clay loam or clay. The argillic horizon has hue of 10YR or 2.5Y, value of 4 thru 6, and chroma of 3 thru 6. The texture is clay with 40 to 50 percent clay. When dry it has cracks one-quarter to one-half inch wide that extend downward from the base of the A horizon. The C horizon is massive shale that is effervescent in some pedons.

Xerertic Haplargids, clayey, montmorillonitic, frigid, shallow, clay loam, 2 to 8 percent slopes (76).--This soil occurs in irregular-shaped areas on footslopes. The profile is similar to that described for the soil family. Included are about 15 percent fine-loamy Typic Haplargids along some drainageways and old, narrow alluvial fans, and clayey-skeletal Typic Torriorthents on some of the steeper sideslopes.

The runoff is medium, and the erosion hazard is slight to moderate.

Xerertic Haplargids-Drewing association (77).--This association occurs as irregular-shaped areas on footslopes. It consists of 40 percent Xerertic Haplargids, clayey, montmorillonitic, frigid, shallow, clay loam, 4 to 8 percent slopes; 30 percent Drewing gravelly loam, 4 to 8 percent slopes; and 15 percent Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow, gravelly clay loam 8 to 15 percent slopes. Included are about 15 percent shale outcrops on some of the steeper sideslopes, fine-loamy Xerollic Haplargids along stream benches, and Fanu soils in narrow flood plains.

The Xerertic Haplargids are on smooth sideslopes and benches of shale; the Drewing soil has formed on ridegetops in old alluvium; and the Xerollic Haplargids are on strongly sloping sideslopes where there has been less soil development. The profiles for component soils are similar to those described for each respective soil Family and series. Differences include andesite and dacite gravel in the Xerertic Haplargids; a few stones on the surface and a shale substrata at 60-inch depth in the Drewing soil; and a gravelly clay loam surface containing andesite and dacite gravel.

The vegetation on the soils in this unit is essentially the same as described for each respective soil family and series.

Runoff is medium on the Xerertic Haplargids and Drewing soil; it is medium to rapid on the Xerollic Haplargids. The Xerertic Haplargids have slight to moderate erosion hazard; it is moderate for Drewing soil; and slight to moderate for the Xerollic Haplargids.

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid shallow

The soils in the area representing this soil family are shallow and gravelly. They formed in dissected tuffs on weakly convex, smooth gently sloping to rolling slopes. The vegetation consists of black sagebrush, rabbitbrush, Indian ricegrass, squirreltail, shadscale, phlox, and a few juniper and pinyon pine trees. They occur at elevations of 6,400 to 7,000 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is about 90 days.

Typical soil family profiles have a sequence of four main parts: (1) a pale brown slightly hard gravelly loam surface layer about 2 inches thick; (2) a brown gravelly loam about 4 inches thick; (3) a very pale brown lime enriced gravelly loam about 2 inches thick; and (4) a layer of highly weathered dacite tuff that extends to 40 inches.

These soils are well drained. Permeability is moderate in the upper part, then very slow in the weathered tuffs. Available water capacity is very low. Runoff is medium, and the erosion hazard is moderate .

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow, gravelly loam, 4 to 15 percent slopes is in Nye County, Nevada in an unsurveyed area at a site about 2,600 feet south, 2,040 feet west of the northeast corner of section 21, T. 10 N., R. 59 E., or 1.3 miles south Manzone Well mainly east of Currant.

(Colors are for dry soil unless otherwise noted).

All--0 to 2 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine platy structure; slightly hard, very friable, slightly sticky, plastic; few fine and very fine roots; common very fine and fine vesicular pores; about 40 percent by volume tuff gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

A12--2 to 6 inches, brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky, plastic; common very fine, fine and medium roots; common fine interstitial pores; about 35 percent by volume volcanic tuffs; some of the gravel is lime coated on the lower sides; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C1ca--6 to 8 inches, very pale brown (10YR 7/3) gravelly loam, pale brown (10YR 6/3) moist; massive; hard, firm, slightly sticky, plastic; common fine and medium roots; common fine interstitial pores; about 40 percent by volume tuff gravel, lime coated on the lower side; about 30 percent lime enriched very highly weathered soft tuffs; violently effervescent; moderately alkaline; abrupt wavy boundary.

A refrigerating brolile of Kenic tortricorthonte, locem-dreleted,
mixed (celcareous), finfold, sbellow, rivvelly loam, 4 to 12 percent
slopes in the county, leveled in an undulating area at a site
about 3,000 feet south, 3,000 feet west of the northeast corner of
section 31, T. 10 N., R. 25 E., or 1.3 miles south southwest well
material east of Content.

(colors are for dry soil unless otherwise noted).

0--LA to 5 inches, brle prown (IOYR 5\3) crivelly loam, prown (IOYR
4\3) moist; weak fine brisk structure; slightly leld, very
friable, slightly sticky, brsetic; wel fris and very fine
roots; common very fine bis fine vesicules; borse; about 40
percent py volume finf crsvel; strongly effervescent;

moderately alkaline; sprubt wavy boundary.

LA--5 to 8 inches, prown (IOYR 5\3) crivelly loam, dsrk prown (IOYR
3\3) moist; weak very fine subangular plocky structure;
moderately alkaline; sprubt smooth boundary.

C2ca--8 to 40 inches, highly weathered dacite tuffs with rock structure evident; hard to extremely hard, very firm to extremely firm; common soft lime seams; gravel and cobbles are lime coated on lower sides; very few fine roots along the lime seams; effervescent; moderately alkaline.

Depth of the soil to the tuffs of rock structure is 6 to 16 inches. Gravel content of the control section is 35 to about 85 percent. The texture is dominantly gravelly clay loam but ranges to very gravelly light clay loam. Cobbly types occur. The A horizon has hue of 10YR or 7.5YR, value is 3 thru 7, and chroma is 3 or 4. The C1ca horizon is similar in color but is usually slightly higher in value. It contains segregated lime on the lower side of gravel as soft masses, and within the highly weathered tuffs. The C2ca horizon consists of highly weathered lime enriched tuffs in and around less weathered pebbles and cobbles. The proportion of unweathered material increases with depth.

Xeric Torriorthents-Xerollic Durargids complex (78).--This association occurs as irregular-shaped areas on beds of dacite tuffs. It consists of 50 percent Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow, gravelly loam, 4 to 15 percent slopes; and 40 percent Xerollic Durargids, loamy-skeletal, mixed, frigid, gravelly loam, 4 to 15 percent slopes. Included are about 10 percent of an unnamed soil similar to the Xeric Torriorthents, except it is more deeply developed and occurs within drainageways and other low lying areas and and unnamed soil similar to the Xerollic Durargids, except it is less than 20 inches deep. The Xeric Torriorthents are on narrow ridgetops and sideslopes; the Xerollic Durargids tend to be on broad smooth ridges. They each have profiles similar to those described for the soil families.

The soils in this association have medium runoff, and moderate erosion hazard.

Xerollic Calciorthids, loamy-skeletal, mixed, mesic

The soils in the area representing this soil family are gently sloping to moderately sloping. They formed in old alluvial fans mainly from limestone. The vegetation consists of winterfat, rabbitbrush, Indian ricegrass, black sagebrush, and shadscale. They are at elevations of 6,000 to 6,600 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 44° to 47° F.; and the frost-free season is 100 to 120 days.

Typical soil family profiles have a sequence of two main parts: (1) a light brownish gray gravelly sandy loam layer about 11 inches thick; and (2) a very pale brown to light brownish gray weakly cemented sandy loam that extends to at least 50 inches.

These soils are well drained and have moderately slow permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

They are used for livestock grazing and wildlife habitat.

A representative profile of Xerollic Calciorthids, loamy-skeletal, mixed, mesic, gravelly sandy loam, 2 to 8 percent slopes, rangeland, is in Nye County, Nevada at a site in an unsurveyed near the east quarter corner of section 23, T. 11 N., R. 54 E., or about 4.6 miles southwest of Portugese Springs.

(Colors are for dry soil unless otherwise noted).

A11--0 to 3 inches, light brownish gray (10YR 6/2) gravelly sandy loam, brown (10YR 4/3) moist; weak fine platy structure; soft, friable, slightly sticky, slightly plastic; few fine, medium and coarse roots; common fine vesicular pores; about 20 percent by volume limestone and tuff gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

A12--3 to 11 inches, light brownish gray (10YR 6/2) gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, friable, nonsticky, nonplastic; common fine, medium and coarse roots; common fine and very fine tubular and interstitial pores; about 25 percent by volume limestone and tuff gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

C1sica--11 to 20 inches, very pale brown (10YR 7/3) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; hard, nonsticky, nonplastic; few fine and very fine roots in gravelly pockets; few fine interstitial pores; about 80 percent by volume fine, medium and coarse gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

C2sica--20 to 50 inches, light brownish gray (10YR 6/2) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; hard, nonsticky, nonplastic; few fine and very fine roots in gravelly pockets; few fine interstitial pores; about 60 percent by volume fine, medium and coarse gravel, 20 percent by volume cobbles; common fine shale fragments; thin layers are cemented; violently effervescent; moderately alkaline.

The depth of the solum to the calcic horizon is 9 to 15 inches. The texture of the A horizon is gravelly loam to gravelly sandy loam. It has hue of 10YR, value of 6, and chroma of 2 or 3. The calcic horizons have weak silica and calcium cementation. Gravel and cobbles range from 20 to 80 percent. Some pedons have shale fragments in the voids between the gravel and cobbles. Hue is 10YR, value of 6 or 7, and chroma of 2 or 3.

This soil family has been mapped only as a component soil in the Durixerollic Calciorthids-Xerollic Calciorthids association (46).

Xerollic Durargids, fine, montmorillonitic, mesic

The soils in the area representing this family are nearly level to gently sloping. They formed in smooth old alluvial fans from dacite, andesite, and tuffs. The vegetation consists of galleta grass, rabbitbrush, and spiny hopsage. They are at elevations of 6,000 to 6,500 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 44° to 47° F.; and the frost-free season is 100 to 120 days.

Typical soil family profiles have a sequence of four main parts: (1) a pale brown gravelly loam surface layer 3 inches thick; (2) a light yellowish brown clay and clay loam layer about 12 inches thick; (3) a very pale brown very gravelly loam layer about 9 inches thick; and (4) an indurated duripan at 24 inches that extends to at least 36 inches.

These soils are well drained, and slowly permeable. Available water capacity is low. The runoff is medium, and the erosion hazard is slight.

These soils are used for livestock grazing, recreation and wildlife habitat.

A representative profile of Xerollic Durargids, fine, montmorillonitic, mesic, gravelly loam, 0 to 4 percent slopes, rangeland, is in Nye County, Nevada in Area 6 at a site approximately 0.5 mile west, 0.35 mile south of the northeast corner of section 24, T. 14 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine platy structure; soft, very friable, slightly sticky, slightly plastic; few fine roots; common very fine and fine vesicular pores; 15 percent gravel, 5 percent cobbles; moderately alkaline; clear smooth boundary.

B21t--3 to 9 inches, light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic parting to moderate fine subangular blocky structure; hard, firm, sticky, plastic; common fine thru coarse roots; common very fine and fine tubular and interstitial pores; 5 percent gravel; strong clay films; moderately alkaline; clear smooth boundary.

B22tca--9 to 15 inches, light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, firm, sticky, plastic; common fine and medium roots; common very fine and fine tubular and interstitial pores; 10 percent gravel; few lime films; strongly effervescent; moderately alkaline; clear smooth boundary.

C1sica--15 to 24 inches, very pale brown (10YR 7/4) very gravelly loam, yellowish brown (10YR 5/6) moist; massive; slightly hard, friable, nonsticky, nonplastic; few fine roots; common very fine and fine tubular and vesicular pores; 40 percent gravel; lime and silica coatings on lower sides of gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

IIC2sicam--24 to 36 inches, laminar capped, indurated, very gravelly duripan.

The solum thickness to the Csica horizon is 11 to 20 inches. The depth to the duripan is 21 to 36 inches. The A horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 or 4. The texture is clay loam or clay with 35 to 45 percent clay. The C1sica horizon has hue of 10YR, value of 6 thru 8, and chroma of 4 thru 6. The texture is gravelly to very gravelly loam or clay loam with 20 to 35 percent clay and 35 to 75 percent by volume gravel and cobbles.

Xerollic Durargids, fine, montmorillonitic, mesic, gravelly loam, 0 to 4 percent slopes (79).--This soil occurs as irregular-shaped areas on old smooth alluvial fans. The profile is the same as described for the soil family. Included are about 15 percent loamy-skeletal Xerollic Haplargids and fine-loamy Xerollic Durargids.

The runoff is medium, and the erosion hazard is slight.

Clarence--If to be taken, very true hope there (1701 2\8) never trust! either! Jesse, hollowly there (1701 2\8) never trust! either! Jesse, hollowly there (1701 2\8) never trust! either!

The golden to the quarter is 11 to 30 inches. The A portion has gotten to the quarter is 11 to 30 inches. The A portion has gotten to the quarter is 11 to 30 inches.

The golden to the quarter is 11 to 30 inches. The A portion has gotten to the quarter is 11 to 30 inches.

Clarence--If to be taken, very true hope there (1701 2\8) never trust! either!

Jesse, hollowly there (1701 2\8) never trust! either! Jesse, hollowly there (1701 2\8) never trust! either!

Xerollic Durargids, loamy-skeletal, mixed, frigid

The soils in the area representing this soil family are moderately sloping to rolling. They have formed in dissected beds of dacite tuffs. The vegetation consists of big sagebrush, black sagebrush, Indian ricegrass, squirreltail, rabbitbrush, and some pinyon and juniper. They are at elevations of 6,400 to 7,000 feet. The mean annual precipitation is 8 to 10 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is about 90 days.

Typical soil family profiles have a sequence of five main parts: (1) a pale brown to brown surface layer of gravelly loam 4 inches thick; (2) a reddish brown gravelly clay loam layer about 14 inches thick; (3) a yellowish red very gravelly sandy clay loam layer about 13 inches thick; (4) a white gravelly silty clay loam, weakly cemented that is about 7 inches thick; and (5) a white weathered tuff layer capped with a thin indurated silica layer that extends to 65 inches.

These soils are well drained and have moderately slow permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is moderate.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Xerollic Durargids, loamy-skeletal, mixed, frigid, gravelly loam, 4 to 15 percent slopes is in Nye County, Nevada at a site about 520 feet south, 2,020 feet west of the northeast corner of section 21, T. 10 N., R. 59 E. They are in the Manzone Well area east of Currant.

(Colors are for dry soil unless otherwise noted).

A11--0 to 2 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine platy structure; slightly hard, friable, slightly sticky, plastic; few very fine and fine roots; many fine vesicular pores; about 20 percent by volume tuff gravel; noneffervescent; mildly alkaline; abrupt smooth boundary.

A12--2 to 4 inches, brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky, plastic; few very fine and fine roots; common fine interstitial pores; about 15 percent by volume tuff gravel; noneffervescent; mildly alkaline; abrupt smooth boundary.

B1t--4 to 6 inches, reddish brown (5YR 5/3) gravelly clay loam, reddish brown (5YR 4/3) moist; weak fine subangular blocky structure; hard, friable, sticky, plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; about 30 percent by volume gravel; few patchy clay films; noneffervescent; mildly alkaline; clear smooth boundary.

B21t--6 to 18 inches, reddish brown (5YR 5/4) gravelly clay loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; hard, firm, sticky, plastic; common very fine, fine and medium roots; common very fine and fine tubular pores; about 30 percent by volume gravel; common strong patchy clay films; noneffervescent; mildly alkaline; clear wavy boundary.

B22tca--18 to 26 inches, yellowish red (5YR 5/6) very gravelly sandy clay loam, yellowish red (5YR 4/6) moist; moderate fine subangular blocky structure; hard, friable, sticky, plastic; common fine and medium roots; common fine tubular pores; about 50 percent by volume gravel; common strong patchy clay films; about 8 percent by volume films and soft masses of lime; strongly effervescent; moderately alkaline; clear wavy boundary.

B3tca--26 to 31 inches, yellowish red (5YR 5/6) very gravelly sandy clay loam, yellowish red (5YR 4/6) moist; weak fine subangular structure; hard, friable, slightly sticky, slightly plastic; few fine and medium roots; few fine tubular pores; about 85 percent by volume gravel; few cobbles; few strong patchy clay films; about 10 percent by volume films and fine soft masses of lime; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C1ca--31 to 38 inches, white (10YR 8/2) gravelly silty clay loam very pale brown (10YR 7/3) moist; massive; platy; weakly cemented; hard, firm, sticky, plastic; few fine roots between plates; few fine and very fine interstitial pores; about 20 percent by volume gravel; few cobbles; about 65 percent by volume films and soft masses of lime; violently effervescent; strongly alkaline; abrupt wavy boundary.

C2sicam--38 to 65 inches, white (10YR 8/1) to very pale brown (10YR 7/4) , massive and platy lime enriched highly weathered dacite tuffs capped with a thin indurated silica layer; extremely hard, extremely firm, has pockets and thin layers that are hard and firm, these pockets contain a very few fine roots; about 50 percent by volume tuff gravel that is only partly weathered; violently effervescent; moderately alkaline.

Depth of the solum to the Cca horizon is 20 to 36 inches. The depth to the hardpan capped tuff is 24 to 40 inches. The amount of gravel in any horizon ranges from 10 to 85 percent. Gravelly and cobbly types occur. The A horizon is 2 to 6 inches thick. It has hue of 10YR or 7.5YR, values of 5 to 6, and chromas of 3 or 4. The Bt horizons are gravelly to very gravelly clay loam to sandy clay loam in texture with 20 to 30 percent clay. Structure is weak to moderate fine subangular blocky. It has hue of 5YR or 7.5YR, values of 4 thru 6, and chroma of 3 thru 6. The C horizons are weakly cemented to cemented and contain indurated silica in some parts. The tuffs become less weathered in depth.

This soil family has been mapped only as a component soil in **Xeric Torriorthents-Xerollic Durargids complex (78).**

Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow

The soils in the area representing this soil family are nearly level to gently sloping. They have formed in gravelly alluvium mainly from limestone and shale. The vegetation consists of big sagebrush, Thurber needlegrass, needle-and-thread grass, Indian ricegrass, rabbitbrush, squirreltail, and miscellaneous forbs. They are at elevations of 6,400 to 7,000 feet where the mean annual air temperature is 41° to 44° F.; mean annual precipitation is 10 to 12 inches; and the frost-free season is 90 to 100 days.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown gravelly loam about 2 inches thick; (2) a brown loam to gravelly clay loam over very gravelly clay loam about 14 inches thick; and (3) a white hardpan at 16 inches that extends to at least 22 inches.

These soils are well drained and have moderately slow permeability. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

These soils are used to provide grazing for livestock and wildlife.

A representative profile of Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow, gravelly loam, 0 to 4 percent slopes, rangeland, is in White Pine County. This site is located approximately 900 feet east and 50 feet south of the northwest corner of section 31, T. 16 N., R. 56 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 2 inches, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky, nonplastic; root crowns; many very fine and fine vesicular pores; neutral; abrupt smooth boundary.

B1t--2 to 4 inches, brown (10YR 5/3) heavy loam, dark yellowish brown (10YR 3/4) moist; strong very fine granular structure; very soft, very friable, slightly sticky, slightly plastic; common very fine roots; many very fine and fine interstitial pores; few very thin clay films as bridges; mildly alkaline; abrupt smooth boundary.

B2t--4 to 11 inches, brown (10YR 5/3) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong fine angular blocky structure; slightly hard, friable, very sticky, very plastic; common very fine and few fine roots; many very fine and fine interstitial pores; common thin clay films as bridges; 30 percent gravel; moderately alkaline; abrupt smooth boundary.

B3t--11 to 16 inches, brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; massive in place but breaks to moderately fine subangular blocky structure; very hard, friable, sticky, plastic; few fine and medium roots; many fine and medium interstitial pores; many thin clay films as bridges and few thin clay films on faces of ped; gravels are lime and silica coated; 60 percent gravel; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C1sicam--16 to 22 inches, white (10YR 8/2 and 8/1) strongly cemented duripan, very pale brown (10YR 7/3) moist; massive but platy in spots; extremely hard, very firm, nonsticky, nonplastic; very few fine roots; few fine and medium interstitial pores; violently effervescent; strongly alkaline; abrupt wavy boundary.

C2sicam--22 inches, very pale brown (10YR 7/3) and white (10YR 8/1) indurated duripan, brown (10YR 5/3) and very pale brown (10YR 7/3) moist; massive but platy in spots; brittle, nonsticky, nonplastic; strongly effervescent.

The thickness of the solum and depth to the indurated duripan ranges from 12 to 20 inches. Color of the A1 horizon includes hue of 10YR, value of 5 to 7 dry, 3 or 4 moist, and chroma of 2 or 3. The A1 horizon is massive, or has weak thin platy structure; Consistence ranges from soft to slightly hard when dry. Colors of the Bt horizons include hue of 10YR, value of 5 or 6 dry, 3 or 4 moist, and chromas of 3 or 4. Texture is clay loam but may include horizons of heavy loam or light clay. The average clay content of the argillic horizon ranges from 25 to 32 percent. Gravel content of the argillic horizon ranges from 38 to 52 percent. Color of the hardpan includes hue of 10YR, value of 7 or 8 dry, and 6 or 7 moist, and chromas of 1 to 3. The upper part of the indurated hardpan consists of 3 to 6 inches of strongly cemented material with indurated platy structure in parts.

Xerollic Durargids-Ramshorn association (80).--This association occurs as regular-shaped areas on alluvial fan piedmonts. It consists of 60 percent Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow, gravelly loam, 0 to 4 percent slopes; and 30 percent Ramshorn very gravelly very fine sandy loam, 0 to 4 percent slopes. Included are about 10 percent Lien and Nark soils. The Xerollic Durargids have a duripan and an argillic horizon. Ramshorn soils lack both the argillic horizon and duripan. Typical profiles are similar to those described for the soil family and series, except the Ramshorn is more sandy throughout the profile.

The Xerollic Durargids have vegetation consisting of big sagebrush, desert needlegrass, Indian ricegrass, needle-and-thread grass, and rabbitbrush. Ramshorn soils have vegetation consisting of big sagebrush, desert needlegrass, and squirreltail.

Runoff is medium, and the erosion hazard is slight to moderate.

Xerollic Durorthids, loamy-skeletal, mixed, mesic

The soils in the area representing this family are moderately sloping to rolling. They have formed in old, dissected alluvial fans from dacite, andesite, basalt, and tuffs. The vegetation is black sagebrush, rabbitbrush, squirreltail, and Indian ricegrass. They are at elevations of 6,400 to 6,800 feet where the mean annual air temperature is 44° to 47° F.; mean annual precipitation is 8 to 10 inches; and the frost-free season is 100 to 120 days. They are in Area 8.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown gravelly loam surface layer about 7 inches thick; (2) a very pale brown and cobbly loam about 7 inches thick; and (3) a laminar capped hardpan at 14 inches.

These soils are well drained and have moderate permeability. The available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

They are used for livestock grazing, recreation, and wildlife habitat.

agricultural horticulture, locum-abdominal, mixed, music

The coils in the area representing this family are moderately
elastic. (3) a very high proportion of coppery iron spots / nucleus thick-
ness. (2) a lenient primary purpose at 14 degree.

These soils are well drained and have moderate permeability.
The available water capacity is low. Runoff is medium, and the erosion
hazard is slight to moderate.

They are used for livestock pasture, recreation, and wildlife
habitat.

A representative profile of Xerollic Durorthids, loamy-skeletal, mixed, mesic, shallow, gravelly loam, 4 to 15 percent slopes, rangeland, is in Nye County, Nevada in the northeast part of Area 8; 0.6 mile south of the northeast corner of section 12, T. 13 N, R. 53 E.

(Colors are for dry soil unless otherwise noted).

A11--0 to 4 inches, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine platy structure; slightly hard, friable, slightly sticky, slightly plastic; very few fine to coarse roots; many very fine and fine vesicular pores; 20 percent gravel; soil surface is covered with 40 percent gravel, 10 percent cobbles, very few stones; 1 to 2 inches of gravelly loamy sand is mounded under sagebrush; effervescent; moderately alkaline; abrupt smooth boundary.

A12--4 to 7 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak medium platy parting to moderate fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many fine to coarse roots; many fine tubular and interstitial pores; 15 percent gravel, 10 percent cobbles, very few stones; effervescent; moderately alkaline; abrupt wavy boundary.

C1sica--7 to 14 inches, very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; massive; hard, friable, nonsticky, nonplastic; very few fine roots; very few fine tubular and interstitial pores; 60 percent gravel, 20 percent cobbles, 5 percent stones; soil mass is weakly cemented; silica-lime cemented pendants on lower side of coarse fragments; violently effervescent; moderately alkaline; abrupt wavy boundary.

C2sicam--14 to 18 inches, laminar capped duripan; extremely hard, extremely firm; violently effervescent; moderately alkaline.

The solum thickness and depth to the weakly cemented calcic horizon is 4 to 10 inches. Cobbles are in most pedons. Depth to the duripan is 10 to 18 inches. The A horizon has hue of 10YR, value of 6 or 7, and chroma of 2 or 3. The texture is very gravelly to gravelly loam or sandy loam. A few pedons have gravelly loamy sand surfaces. The C1sica horizon has hue of 10YR, value of 6 thru 8, and chroma of 3 or 4. The texture is very gravelly loam or sandy loam with 60 to 80 percent by volume coarse fragments that are dominantly gravel.

dominantly gray.

loam with 60 to 80 percent by volume coarse fragments that are
and chroma of 3 or 4. The texture is very gravelly loam or sandy
gravelly loam or sandy loam. A few horizons have gravelly loamy sand
antigrass. The clayey horizon has hue of 10YR, value of 6 from 8,
of 6 or 7, and chroma of 3 or 3. The texture is very gravelly to
the quarter is 10 to 18 inches. The A horizon has hue of 10YR, value

horizon is 4 to 10 inches. Copples are in most begone. Depth to
Clayton--7 to 14 inches, very base proom (10YR 5\4) moist; massive; part, fribable, non-
loam, proam (10YR 5\3) moist; massive; part, fribable, non-
sticky, nonplastic; very few fine roots; very few fine tubu-
lar and tubercular bores; 60 percent gravel, 50 percent
copples, 5 percent stones; soil base is mostly composed
silica-lime compound bonded to form slab of coarse grav-
ments; violently effervescent; moderately alkaline; sprupt
wavy boundary.

Clayton--14 to 18 inches, lamina cobbly quarter; extremely part
extremely firm; violently effervescent; moderately alkaline.

The volum fulcrases and depth to the mostly composed caltic

Xerollic Durorthids, loamy-skeletal, mixed, mesic, shallow, gravelly loam, 4 to 15 percent slopes (81).--This soil occurs in irregular-shaped areas on footslopes or valley fill at the base of mountains of volcanic origin. The profile is similar to the one described for the soil family. Included are about 15 percent loamy-skeletal Durargids on smooth fan tops, and fine-loamy Xerollic Haplargids along drainageways.

The runoff is medium, and the erosion hazard is slight to moderate.

Xerollic Durorthids, coarse-loamy, mixed, frigid, shallow

The soils in the area representing this soil family are gently sloping to moderately sloping. They have formed in old alluvial fans mainly from limestone and shale. The vegetation consists of black sagebrush, Indian ricegrass, rabbitbrush, and small amounts of winterfat, squirreltail, and miscellaneous forbs. They are at elevations of 6,200 to 6,800 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season is 90 to 100 days. They are in area 1.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown gravelly loam surface layer 3 inches thick; (2) a very pale brown loam over a gravelly sandy loam about 14 inches thick; and (3) a series of white gravelly layers and indurated hardpan that extends to at least 36 inches.

These soils are well drained, and have moderate to moderately rapid permeability. The available water capacity is low. Runoff is medium, and erosion hazard is slight to moderate.

They are presently used to provide grazing for livestock.

A representative profile of Xerollic Durorthids, coarse-loamy, mixed, frigid, shallow, gravelly loam, 2 to 8 percent slopes, rangeland, in an area of Xerollic Durorthids-Durixerollic Calciorthids association is located in White Pine County, Nevada at a site approximately 900 feet north and 50 feet east of the southwest corner of section 6, T. 16 N., R. 57 E.

(Colors are for dry soil unless otherwise noted).

A1--0 to 3 inches, pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; moderate very fine platy structure; very soft, very friable, slightly sticky, slightly plastic; root crowns and common very fine roots; few very fine and fine vesicular, and many very fine and fine interstitial pores; slightly effervescent; moderately alkaline; abrupt smooth boundary.

B21--3 to 10 inches, very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; very weak fine subangular blocky structure; soft, very friable, slightly sticky, slightly plastic; many very fine and few fine roots; many very fine and fine interstitial pores, and few very fine tubular pores; very few very thin clay films on gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

B22--10 to 14 inches, very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, friable, nonsticky, nonplastic; many very fine, and few fine roots; many very fine and fine interstitial pores; 15 percent gravel; strongly effervescent; strongly alkaline; clear wavy boundary.

C1sica--14 to 17 inches, very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, friable, nonsticky, nonplastic; many very fine roots; many very fine and fine interstitial pores; 15 percent gravel; gravel are lime and silica coated; strongly effervescent; strongly alkaline; abrupt wavy boundary.

C2sicam--17 to 22 inches, white (10YR 8/2 and 8/1) indurated duripan, light brownish gray (10YR 6/2) and light gray (10YR 7/2) moist; strong coarse platy structure; extremely hard, very firm, nonsticky, nonplastic; few very fine roots in spots; few coarse interstitial pores; strongly and violently effervescent; strongly alkaline; abrupt wavy boundary.

C3sicam--22 to 30 inches, white (10YR 8/2 and 8/1) strongly cemented gravel, light brownish gray (10YR 6/2) and light gray (10YR 7/2) moist; weak medium platy structure; very hard, firm, nonsticky, nonplastic; many very fine and micro roots; common medium and coarse interstitial pores; strongly effervescent; very strongly alkaline; abrupt smooth boundary.

C4sicam--30 to 36 inches, white (10YR 8/2 and 8/1) strongly cemented duripan, light brownish gray (10YR 6/2) and light gray (10YR 7/2) moist; strong coarse platy structure; extremely hard, very firm, nonsticky, nonplastic; few very fine roots in spots; few coarse interstitial pores; strongly and violently effervescent; strongly alkaline; abrupt wavy boundary.

The thickness of the solum ranges from 10 to 17 inches and depth to indurated duripan ranges from 14 to 20 inches. Color of the A horizon includes hue of 10YR, value of 6 or 7 dry, 4 or 5 moist, and chroma of 2 or 3. The A horizon is moderate very fine platy structure, or it is massive. Consistence ranges from soft to slightly hard when dry. Color of the duripan is highly variable having hue of 10YR or 7.5YR, value of 6 to 8 dry, 4 to 6 moist, and chroma of 1 to 5. The strongly cemented duripan contains many indurated lenses.

Xerollic Durorthids-Durixerollic Calciorthids association (83).--This association occurs as regular-shaped areas on alluvial fans. It consists of about 40 percent Xerollic Durorthids, coarse-loamy, mixed, frigid, shallow, gravelly loam, 2 to 8 percent slopes; 30 percent Durixerollic Calciorthids, loamy-skeletal, mixed, frigid, gravelly loam, 2 to 8 percent slopes; and 20 percent Haploxerollic Durorthids, loamy-skeletal, mixed, frigid, gravelly loam, 0 to 4 percent slopes. Included are about 10 percent Buster and Lien soils. The Xerollic Durorthids have duripans at depths less than 20 inches. The Durixerollic Calciorthids lack duripans. The Haploxerollic Durorthids have duripans at depths below 20 inches. These soils each have profiles similar to those described for the soil families.

The Xerollic Durorthids and Durixerollic Calciorthids have vegetation that consists of black sagebrush, Indian ricegrass, rabbitbrush, and small amounts of winterfat. The Haploxerollic Durorthids vegetation consists of big sagebrush, Indian ricegrass, needle-and-thread grass, and scattered juniper.

Runoff is medium for these soils. The erosion hazard is slight to moderate.

Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow

The soils in the area representing this family are moderately sloping to moderately steep. They are shallow over shale. The vegetation consists of black sagebrush, juniper, squirreltail, and Indian ricegrass. They are at elevations of 6,200 to 6,700 feet where the mean annual air temperature is 41° to 44° F.; mean annual precipitation 10 to 12 inches; and the frost-free season is about 90 days. They are in Areas 2, 4, 11, and 12.

Typical soil family profiles have a sequence of three main parts: (1) a surface layer of light gray gravelly silty clay loam about 3 inches thick; (2) a reddish brown very shaly clay about 5 inches thick; and (3) a pinkish gray shale that extends to at least 20 inches.

These soils are well drained and are slowly permeable. The available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

They are used for livestock grazing, recreations, and wildlife habitat.

A representative profile of Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow, gravelly silty clay loam, 4 to 30 percent slopes, rangeland, is located in White Pine County, Nevada in Area 2 at a site 0.1 mile south, 0.15 mile west of the northeast corner of section 11, T. 15 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A--0 to 3 inches, light gray (10YR 7/2) gravelly silty clay loam brown (10YR 4/3) moist; weak fine platy structure; hard, firm, sticky, plastic; very few fine roots; many very fine vesicular pores; 40 percent by volume flattened gravel of shale, sandstone, and siltstone; moderately alkaline; very abrupt irregular boundary.

B2t--3 to 8 inches, reddish brown (5YR 5/4) very shaly clay, reddish brown (5YR 4/4) moist; clay part has strong very fine angular blocky structure; hard, firm, very sticky, very plastic; few fine roots; few very fine interstitial and tubular pores; few clay films; about 75 percent by volume fractured shale fragments; moderately alkaline; clear irregular boundary.

C--8 to 20 inches, pinkish gray (7.5YR 6/2) thinly bedded shale, brown (7.5YR 5/2) moist; extremely hard, extremely firm, fractured; few very thin clay seams in fractures in upper 10 inches; very few fine roots in the clay seams; faces of some fractures are dark red (2.5YR 3/6); moderately alkaline.

The depth to bedded shale or siltstone is 5 to 12 inches. The A horizon has hue of 7.5YR or 10YR, value of 6 or 7, and chroma of 2 or 3. The texture is gravelly silty clay loam to silty clay. The B2t horizon has hue of 7.5YR or 5YR, value of 4 thru 6, and chroma of 3 thru 6. The percentage of shale varies from 60 to 90 percent. The C horizon has hue of 7.5YR 10YR, or 2.5YR, value of 3 thru 6, and chroma of 2 thru 6. It is shale or siltstone.

Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow, gravelly silty clay loam, 4 to 30 percent slopes (82).--This soil occurs as irregular-shaped areas in dissected shale beds on ridge top and sideslopes. The general slope is 5 to 8 percent down the ridgetop, and 15 to 25 percent on the sideslopes. The profile is similar to that described for the soil family. Included are about 15 percent loamy-skeletal and fine-loamy Typic Torriorthents over sandstone which are on some of the ridges; Fanu soils in narrow drainageways; and shale outcrop on some sideslopes.

Runoff is medium, and the erosion hazard is slight to moderate.

Xerollic Haplargids, fine-loamy, mixed, frigid

The soils in the area representing this family are gently to moderately sloping. They have formed in old alluvium that is 40 to 60 inches thick, from dacite, andesite, tuffs, and shale. The vegetation is Utah juniper, pinyon pine, big sagebrush, and scattered grasses. They are at elevations of 6,400 to 6,800 feet where the mean annual precipitation is 10 to 12 inches; mean annual air temperature is 40° to 44° F.; and the frost-free season 90 to 100 days. They are in Areas 2 and 17.

Typical soil family profiles have a sequence of four main parts: (1) a surface layer that is a pale brown coarse sandy loam in the upper 2 inches, and gravelly loam in the lower 2 inches; (2) a brown gravelly sandy clay loam layer about 11 inches thick; (3) a very pale brown to pale brown gravelly sandy loam layer about 33 inches thick; and (4) a light yellowish brown shale that extends to 60 inches.

These soils are well drained, and have moderately slow permeability. The available water capacity is moderate. Runoff is medium, and the erosion hazard is moderate.

They are used for livestock grazing, post harvesting, recreation, and wildlife habitat.

Xanthic Hydrazides: Ring-Iodo, Nitro, Diethyl

The acids in the more representative this family are useful to a moderately elevated. They form white, crystalline powders from water, which are to 60 inches thick, from chalcite, sandstone, shale, and clay. The accentuation is often important, giving rise, as mentioned, and accentuated. They are a elevation of 2,400 to 4,000 feet above sea level. They

A representative profile of Xerollic Haplargids, fine-loamy, mixed, frigid, coarse sandy loam, 4 to 8 percent slopes, rangeland, is in White Pine County, Nevada in the north-central part of Area 2 at a site 0.3 mile south, 0.65 mile west of the northeast corner of section 26, T. 16 N., R. 55 E.

(Colors are for dry soil unless otherwise noted).

A11--0 to 2 inches, pale brown (10YR 6/3) coarse sandy loam, dark brown (10YR 3/3) moist; weak fine platy structure; soft, very friable, nonsticky, nonplastic; common very fine vesicular pores; 10 percent gravel; moderately alkaline; abrupt smooth boundary.

A12--2 to 4 inches, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine platy structure; soft, friable, slightly sticky, slightly plastic; common weak very fine and fine vesicular pores; 20 percent gravel; moderately alkaline; abrupt smooth boundary.

B21t--4 to 7 inches, brown (10YR 5/3) gravelly sandy clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine thru coarse roots; common very fine thru medium tubular and interstitial pores; 15 percent gravel; moderately alkaline; abrupt smooth boundary.

B22t--7 to 15 inches, brown (10YR 5/3) gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine thru coarse roots; common very fine thru medium tubular and interstitial pores; 30 percent gravel; moderately alkaline; clear wavy boundary.

B3tca--15 to 22 inches, very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; few fine thru coarse roots; common fine and medium tublar and interstitial pores; 40 percent gravel; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C1--22 to 48 inches, pale brown (10YR 6/3) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; few fine thru coarse roots; common fine and medium tubular and interstitial pores; 30 percent gravel; weakly effervescent; moderately alkaline; abrupt wavy boundary.

IIC2--48 to 60 inches, light yellowish brown (10YR 6/4) shale; yellowish brown (10YR 5/4) moist; massive; hard, very firm; thin seams of clay contain a few roots; noneffervescent except in clay seams; moderately alkaline.

The depth to the IIC horizon is 40 to 60 inches. The control section is gravelly loam, clay loam or sandy clay loam with 18 to 30 percent clay. The gravel is dominantly fine and is 15 to 30 percent by volume of the control section. Thin layers may have more than 35 percent by volume gravel. The A horizon has hue of 10YR, value of 6 or 7, and chroma of 2 or 3. The texture is coarse sandy loam to gravelly or very gravelly loam. The Bt horizons have hue of 10YR, value of 5 thru 7, and chroma of 3 or 4. The lower part has segregated lime. The calcium carbonate equivalent is less than 15 percent. The IIC horizon is shale or massive clay.

Xerollic Haplargids, fine-loamy, mixed, frigid, coarse sandy loam, 4 to 8 percent slopes (84).--This soil occurs as small, irregular-shaped areas that are adjacent to higher lying mountains or foothills. The profile is similar to that described for the soil family. Included are about 10 percent Durixerollic Haplargids and Xerollic Haplargids that are in alluvium thicker than 60 inches or that overlie tuffs.

The runoff is medium, and the erosion hazard is moderate.

The result is modern, and the erosion pattern is moderate.

Xerollic Haplargids, fine-loamy, mixed, thermic, Typic Natrargids

The depth to the IIC positions it 10 to 40 inches. The control section is argillic loam, clay loam or sandy loam, 4 to 8 percent clay (As).--Mine soil occurs as small, irregular-shaped areas that are adjacent to playa (Ly) soils or foothills. The profile is similar to that described for the soil series except it has 10 percent Duratorollic Haplargids and less than 15 percent gravel. Included, are spots of 10 percent Duratorollic Haplargids that are 1 to 3 acres or less in size and 10 percent Xerollic Haplargids that are 10 inches or more deep to a duripan.

The depth to the IIC positions it 10 to 40 inches. The control section is argillic loam, clay loam or sandy clay loam with 18 to 35 percent clay. Mine soil occurs as small, irregular-shaped areas that are adjacent to playa (Ly) soils or foothills. The profile is similar to that described for the soil series except it has 10 percent Duratorollic Haplargids and less than 15 percent gravel. Included, are spots of 10 percent Duratorollic Haplargids that are 1 to 3 acres or less in size and 10 percent Xerollic Haplargids that are 10 inches or more deep to a duripan.

Xerollic Haplargids, fine-loamy, mixed, thermic, Typic Natrargids

The depth to the IIC positions it 10 to 40 inches. The control section is argillic loam, clay loam or sandy clay loam with 18 to 35 percent clay (As).--Mine soil occurs as small, irregular-shaped areas that are adjacent to playa (Ly) soils or foothills. The profile is similar to that described for the soil series except it has 10 percent Duratorollic Haplargids and less than 15 percent gravel. Included, are spots of 10 percent Duratorollic Haplargids that are 1 to 3 acres or less in size and 10 percent Xerollic Haplargids that are 10 inches or more deep to a duripan.

The result is modern, and the erosion pattern is moderate.

Xerollic Haplargids, fine-loamy, mixed, mesic

The soils in the area representing this family are gently to moderately sloping. They have formed in old alluvial fans from shale, tuffs and volcanic flowrock. The vegetation is rabbitbrush, big sagebrush, spiny hopsage, halogeton, and Indian ricegrass. They are at elevations of 6,200 to 6,600 feet. The mean annual precipitation is 8 to 10 inches; mean annual air temperature 44° to 48° F.; and the frost-free season is 100 to 120 days. They are in Area 9.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown gravelly loam to loam surface layer about 5 inches thick; (2) a pale brown gravelly clay loam layer about 7 inches thick; and (3) a very pale brown gravelly sandy loam that extends to 60 inches.

These soils are well drained, and moderately permeable. The available water capacity is moderate. Runoff is medium, and the erosion hazard is slight to moderate.

These soils are used for livestock grazing and wildlife habitat.

A representative profile of Xerollic Haplargids, fine-loamy, mixed, mesic, gravelly loam, 2 to 8 percent slopes, rangeland, is located in Nye County, Nevada at a site 1300 feet southwest of the northeast corner of section 1, T. 11 N., R. 54 E., or about 1.4 miles southwest of Portugese Springs.

(Colors are for dry soils unless otherwise noted).

A11--0 to 1 inch, pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; very weak fine platy structure; soft, very friable, slightly sticky, slightly plastic; few fine, medium and coarse roots; common fine vesicular pores; 15 percent by volume fine gravel; moderately alkaline; abrupt smooth boundary.

A12--1 to 5 inches, pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak fine structure; soft, very friable, slightly sticky, slightly plastic; common fine, medium and coarse roots; common fine vesicular and interstitial pores; 10 percent by volume fine gravel; moderately alkaline; abrupt smooth boundary.

B2t--5 to 12 inches, pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, friable, sticky, plastic; common fine, medium and coarse roots; common fine tubular and interstitial pores; 15 percent by volume fine gravel; clay films on some peds. moderately alkaline; abrupt wavy boundary.

C1ca--12 to 22 inches, very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, very slightly sticky, very slightly plastic; common fine, medium and coarse roots; common fine and very fine tubular and interstitial pores; 30 percent by volume gravel; few durinodes; violently effervescent; strongly alkaline; abrupt wavy boundary.

C2sica--22 to 32 inches, very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, very slightly sticky, very slightly plastic; few fine, medium, and coarse roots; few fine tubular and interstitial pores; 40 percent by volume gravel; weakly cemented in places; violently effervescent; strongly alkaline; abrupt wavy boundary.

C3ca--32 to 60 inches, very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky, nonplastic; few fine and very fine roots; few fine and very fine tubular and intersitial pores; 20 percent by volume gravel; violently effervescent; strongly alkaline.

Depth of the solum to the calcic horizon is 10 to 14 inches. The texture of the A horizon is gravelly loam to gravelly light sandy loam. It has hue of 10YR, value of 6 or 7, and chroma of 3, dry; hue of 10YR, value of 4, and chroma of 2 or 3, moist. The calcic horizons have weak silica and lime cementation. Gravel ranges from 10 to 40 percent. The C horizons have hue of 10YR, value of 6 or 7, and chroma of 3.

Xerollic Haplargids, fine-loamy, mixed, mesic, gravelly loam, 2 to 8 percent slopes (85).--This soil occurs as irregular-shaped areas on alluvial fans. The profile is the same as that described for the soil family. Included are about 10 percent Typic Haplargids and Typic Camborthids in and near drainageways.

Runoff is medium, and the erosion hazard is slight to moderate.

Xerollic Paleargids, clayey-skeletal, montmorillonitic, mesic, very stony

The soils in the area representing this soil family are gently to moderately sloping. They have formed in old alluvial fans from basalt, andesite, dacite, and tuffs. The vegetation is black sagebrush, galleta grass, rabbitbrush, and squirreltail. Elevations range from 6,400 to 6,800 feet. The mean annual precipitation is about 8 inches; mean annual air temperature is 44° to 47° F.; and the frost-free season is 100 to 120 days.

Typical soil family profiles have a sequence of three main parts: (1) a pale brown very stony gravelly sandy loam surface layer about 4 inches thick; (2) a brown stony gravelly clay over yellowish brown stony and very gravelly sandy clay loam about 12 inches thick; and (3) a very pale brown stony and gravelly coarse loamy sand that extends to at least 44 inches.

These soils are well drained and slowly permeable. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

These soils are used for livestock grazing, recreation, and wildlife habitat.

A representative profile of Xerollic Paleargids, clayey-skeletal, montmorillonitic, mesic, very stony gravelly sandy loam, 0 to 8 percent slopes, rangeland, is in Area 8 in Nye County, Nevada; 600 feet northwest of the township marker at the southeast corner of sec. 36. T. 12 N., R. 52 E.

(Colors are for dry soil unless otherwise noted).

A--0 to 4 inches, pale brown (10YR 6/3) very stony gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine platy structure; soft, friable, nonsticky, nonplastic; very few fine roots; few root crowns; many very fine and fine vesicular pores; 30 percent gravel, 20 percent cobbles, 5 percent stones; 1 to 2 inches of gravelly loamy sand under sagebrush; moderately alkaline; abrupt smooth boundary.

B21t--4 to 10 inches, brown (7.5YR 5/4) stony gravelly clay, dark brown (7.5YR 4/4) moist; moderate fine blocky and subangular blocky structure; hard, firm, very sticky, very plastic; many fine to coarse roots; common very fine and fine tubular and interstitial pores; 35 percent gravel; 15 percent cobbles, 5 percent stones; strong clay films; moderately alkaline; abrupt irregular boundary.

B3tca--10 to 16 inches, yellowish brown (10YR 5/4) stony gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; hard, friable, sticky, plastic; common fine thru coarse roots; common very fine and fine tubular and interstitial pores; 35 percent gravel, 15 percent cobbles, 5 percent stones; few lime films; strongly effervescent; moderately alkaline; clear smooth boundary.

C1sica--16 to 30 inches, very pale brown (10YR 7/3) stony gravelly coarse loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky, nonplastic; few fine roots; common very fine and fine tubular and interstitial pores; 40 percent gravel, 15 percent cobbles, 3 percent stones; few calcium carbonate filaments; silica-lime pendants on lower side of coarse fragments; violently effervescent; moderately alkaline; gradual smooth boundary.

C2--30 to 44 inches, very pale brown (10YR 7/3) stony gravelly coarse loamy sand, massive; soft, very friable, nonsticky, nonplastic; very few fine roots; 40 percent gravel, 20 percent cobbles, 5 percent stones; effervescent; strongly alkaline.

The solum thickness and depth to the Csica horizon is 10 to 18 inches. There is an abrupt textural change from the A to the Bt horizon. The A horizon has hue of 10YR, value of 6 or 7, and chroma of 2 or 3. The texture is stony to gravelly or very gravelly sandy loam or loam. The B21t horizon has hue of 7.5YR or 10YR, value of 4 thru 6, and chroma of 3 thru 6. The texture is stony to gravelly or very gravelly clay with 40 to 50 percent clay. The percent of coarse fragments by volume ranges from 40 to 70 percent. The C horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. The texture is stony to gravelly sandy loam to loamy sand. The percent of coarse fragments by volume ranges from 50 to 85 percent.

Xerollic Paleargids, clayey-skeletal, montmorillonitic, mesic, very stony gravelly sandy loam, 4 to 8 percent slopes (86).--This soil occurs as irregular-shaped areas on old alluvial fans. They are in footslope positions below mountains of volcanic origin. The profile is similar to the one described for the soil family. Included are about 10 percent loamy-skeletal Xerollic Paleargids, and loamy-skeletal Xerollic Durorthids.

Runoff is medium, and the erosion hazard is slight to moderate.

Yody Series

The Yody series are gently to moderately sloping soils that have formed in old alluvial fans from andesite, dacite, basalt, and tuffs. The vegetation is big sagebrush, squirreltail, and Indian ricegrass. They are at elevations of 6,200 to 6,800 feet where the mean annual precipitation is 8 to 10 inches; mean annual air temperature is 45° to 47° F.; and the frost-free season 100 to 120 days. Yody soils are in areas 8 and 14.

Typical Yody soil profiles have a sequence of four main parts: (1) a surface layer 3 inches thick that is pale brown gravelly loamy sand in the upper part and pale brown gravelly sandy loam in the lower part; (2) a brown sandy clay loam to light yellowish brown gravelly sandy clay loam about 13 inches thick; (3) a light yellowish brown gravelly sandy loam to very pale brown gravelly to very gravelly loamy sand about 22 inches thick; and (4) very pale brown stratified silica-lime cemented materials that extend to at least 60 inches.

Yody soils are well drained and moderately permeable. Available water capacity is low. Runoff is medium, and the erosion hazard is slight to moderate.

These soils are used for livestock grazing, recreation, and wildlife habitat.

A representative profile of Yody gravelly loamy sand, 2 to 8 percent slopes, rangeland, in an area of Yody-Abgese association is located in Nye County, Nevada; 0.6 mile south of quartzite outcrop in Area 8, 0.8 mile west, 0.7 mile south of the northeast corner of sec. 19, T. 13 N., R. 53 E.

(Colors are for dry soil unless otherwise noted).

A11--0 to 1 inch, pale brown (10YR 6/3) gravelly loamy sand, dark brown (10YR 3/3) moist; single grained; loose, nonsticky, nonplastic; few root crowns; 20 percent gravel; moderately alkaline; abrupt smooth boundary.

A12--1 to 3 inches, pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine platy structure; slightly hard, friable, nonsticky, nonplastic; few fine and medium roots; common fine vesicular pores; 15 percent gravel; moderately alkaline; abrupt smooth boundary.

B21t--3 to 11 inches, brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine to coarse roots; common fine tubular and interstitial pores; 10 percent gravel; patchy clay films; moderately alkaline; clear wavy boundary.

B22tca--11 to 16 inches, light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky, plastic; common fine roots; common fine tubular and intersitial pores; 20 percent gravel; patchy clay films; few lime filaments; moderately alkaline; abrupt wavy boundary.

C1sica--16 to 26 inches, light yellowish brown (10YR 6/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, slightly sticky, slightly plastic; few fine thru coarse roots; common fine tubular and interstitial pores; 25 percent gravel; weakly silica cemented; strongly effervescent; moderately alkaline; clear smooth boundary.

C2sica--26 to 38 inches, very pale brown (10YR 7/3) gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; very few fine roots; common very fine and fine tubular and interstitial pores; 35 percent gravel; few discontinuous, very hard silica-lime cemented layers, 1 to 3 inches thick; violently effervescent; moderately alkaline; abrupt smooth boundary.

C3sica--38 to 60 inches, very pale brown (10YR 7/3) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, nonsticky, nonplastic; very few very fine roots; few fine interstitial pores; 60 percent gravel; capped with a continuous very hard, silica-lime cemented layer 2 to 3 inches thick; few thin strata are very hard and very firm; violently effervescent; moderately alkaline.

The solum thickness is 14 to 24 inches. Stones and cobbles are in many pedons. There is weak cementation by silica and lime within the calcic horizon. Depth to cemented hardpan is 30 to 40 inches. The A horizon has hue of 10YR, value of 6 or 7 and chroma of 2 or 3. The A11 horizon is loose gravelly loamy sand that is mounded under plants by wind erosion. In many pedons this layer is absent or only under plants. The A12 horizon is a gravelly loam to gravelly sandy loam and is strongly vesicular. In many pedons it is cracked into 6-sided figures. The Bt horizon has hue of 7.5YR or 10YR, value of 4 thru 6 and chroma of 3 or 4. The texture is gravelly sandy clay loam to clay loam with less than 35 percent clay. The Csica horizon has hue of 10YR, value of 6 thru 8 and chroma of 2 thru 4. The texture ranges from gravelly to very gravelly loam or sandy loam in the upper part and very gravelly loamy sand in the lower part.

Yody-Abgese association (87).--This association occurs as large, irregular-shaped areas on old, alluvial fans. They cover broad areas interrupted only by large drainageways, or an occasional rock outcrop.

It consists of about 50 percent Yody gravelly loamy sand, 2 to 8 percent slopes; and 35 percent Abgese gravelly loamy sand, 2 to 8 percent slopes. Included are about 15 percent loamy-skeletal Durixerollic Haplargids and Durixerollic Calciorthids on ridge crests.

The Yody soils tend to be on broad ridgetops, and the Abgese soils are on smooth sideslopes in and at the head of small drainageways. The profiles for these soils are similar to those described for the series, except Abgese soils are not as gravelly.

The vegetation on these soils is big sagebrush, rabbitbrush, and Indian ricegrass.

The runoff is medium for these soils. The erosion hazard is slight to moderate.

Yody-Bravane association (88).--This association occurs as long, irregular-shaped bands. They are on broad, smooth, weakly dissected old alluvial fans.

It consists of 50 percent Yody stony loamy sand, 4 to 8 percent slopes; and 35 percent Bravane stony loamy sand, 4 to 8 percent slopes. Included are about 15 percent loamy-skeletal Xerollic Haplargids along the larger drainageways.

The Yody soils have sandy clay loam subsoils. The profile is similar to that described for the series, except it has stones and cobbles throughout. The Bravane soils have clay subsoils. The profile for this soil is the same as that described for the series.

The vegetation is big sagebrush, galleta grass, and squirreltail on the Yody soils.

Runoff is medium, and the erosion hazard is slight to moderate.

CAPABILITY GROUPING

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, for forest trees, or engineering.

In this survey the soils are grouped at two levels; the capability class and subclass. These are discussed in the following paragraphs.

CAPABILITY GROUPING

Capability grouping aims, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and secondary extensive modifications that would change slope, depth, or other characteristics not readily changed at all by the ordinary practices of soil management. Those limitations are discussed in the following paragraphs.

In this survey the soils are grouped at two levels: the capability class and subclass. These are discussed in the following paragraphs.

Capability Classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V soils are not likely to erode but have other limitations impractical to remove that limit their use largely to pasture, range, woodland, or wildlife.

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife.

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply, or to esthetic purposes.

capability classes, the prosperous group, are designated by Roman numerals I through XIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of crops or require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of crops, require special conservation practices, or both.

Class IV soils have very severe limitations that restrict the choice of crops, require very careful management, or both.

Class V soils are not likely to erode but have other limitations impractical to remove that limit their use largely to pasture, range, woodland, or wildlife.

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland, or wildlife.

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply, or to esthetic purposes.

Capability Subclasses are soil groups within one class; they are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, IIe. The letter e shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is too cold to too dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by w, s, and c because the soils in class V are subject to little or no erosion though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife or recreation.

In table 3, the soils are given a dryland and irrigated capability. If the soil is unsuited for irrigation, the column is left blank. Irrigation water is not now available but may become available at some future date.

future date.

If the soil is unsuitable for irrigation, the colonel is left plead-
ing water is not now available but may become available at some

In table 3, the soils are given a qualified and tentative capability.
or reclamation.

that restrict their use largely to pasture, range, woodland, wildlife
applies to little or no erosion though they have other limitations
classes indicated by W, S, and C because the soils in class V are
have few limitations. Class V can contain, at the most, only the sup-

In class I there are no subclasses because the soils of this class
are level to nearly level.

Capability subclasses are soil groups within one class; they are
designated by adding a small letter, e, w, s, or c, to the class
numeral, for example, IIe. The letter e shows that the main limi-
tation is risk of erosion unless close-growing plant cover is maintained;
w shows that water in or on the soil interferes with plant growth or
cultivation (in some soils the wetness can be partly corrected by
artificial drainage); s shows that the soil is limited mainly because
it is shallow, stony, or otherwise; and c, used in only some parts of
the United States, shows that the chief limitation is climate that is
too cold or too dry.

Table 3 - Land capability class and subclass

Map Symbol	Soil Name	Irri-gated	Dry land
22	Abgese sandy loam, 0 to 4 percent slopes	IIe	VIc
23	Abgese sandy clay loam, 2 to 4 percent slopes	IIe	VIc
24	Abgese-Portmount association		
	Abgese gravelly loamy sand, 2 to 4 percent slopes	IIs	VIs
	Portmount very gravelly loamy sand, 2 to 4 percent slopes	IVe	VIIs
25	Abgese-Durixerollic Calciorthids association		
	Abgese gravelly loamy sand, 2 to 4 percent slopes	IIs	VIs
	Durixerollic Calciorthids, loamy-skeletal, mixed, mesic, gravelly sandy loam, 2 to 4 percent slopes	IVe	VIIs
26	Abgese-Haploxerollic Durargids association		
	Abgese gravelly loamy sand, 2 to 8 percent slopes	IIs	VIs
	Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow, gravelly loam, 4 to 15 percent slopes	-	VIIs
	Haploxerollic Durargids loamy-skeletal, mixed, mesic, gravelly loam, 4 to 15 percent slopes	-	VIIs
27	Abruptic Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, shallow, stony, cobbly and gravelly sandy loam, 8 to 15 percent slopes	-	VIIs
28	Ansping gravelly coarse sandy loam, 4 to 15 percent slopes	-	VIs
29	Ansping-Aridic Calcixerolls association		
	Ansping gravelly loam, 4 to 8 percent slopes	-	VIs
	Aridic Calcixerolls fine, carbonatic, frigid, very gravelly loam, 15 to 30 percent slopes	-	VIIs
	Calciorthidic Haploxerolls, fine, montmorillonitic, frigid, clay loam, 4 to 8 percent slopes	IIIe	VIc
30	Aridic Calcixerolls-Fanu association		
	Aridic Calcixerolls, loamy-skeletal, mixed, frigid, shallow, gravelly loam, 8 to 30 percent slopes	-	VIIe
	Fanu gravelly fine sandy loam, 2 to 8 percent slopes	IVe	VIc

Table 3 - Land capability class and subclass

Map Symbol	Soil Name	Irri-gated	Dry land
31	Aridic Durixerolls, fine-loamy, mixed, frigid, gravelly loam, 0 to 4 percent slopes	IIIe	VIc
32	Belmill gravelly sandy loam, 0 to 4 percent slopes	IVe	VIc
33	Belmill gravelly loam, 4 to 8 percent slopes	IVe	VIc
34	Bruffy silt loam, 2 to 4 percent slopes	IIe	VIc
35	Buster gravelly sandy loam, 2 to 8 percent slopes	IVe	VIc
36	Buster loam, 0 to 4 percent slopes	IVe	VIc
37	Buster-Handy association		
	Buster gravelly sandy loam, 2 to 8 percent slopes	IVe	VIc
	Handy gravelly clay loam, 2 to 8 percent slopes	IVe	VIc
38	Buster-Pedoli association		
	Buster gravelly loam, 2 to 8 percent slopes	IVe	VIc
	Pedoli gravelly sandy loam, 2 to 8 percent slopes	IVe	VIc
39	Buster-Handy-Xerollic Haplargids association		
	Buster gravelly sandy loam, 2 to 8 percent slopes	IVe	VIc
	Handy gravelly clay loam, 4 to 8 percent slopes	IVe	VIc
	Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow, gravelly silty clay loam, 8 to 15 percent slopes	-	VIIs
40	Bylo silt loam, 0 to 2 percent slopes	IVc	VIc
41	Bylo silt loam, 0 to 4 percent slopes	IVe	VIc
42	Bylo silty clay loam, 0 to 2 percent slopes	IVc	VIc
43	Bylo-Abgese association		
	Bylo silt loam, 0 to 4 percent slopes	IVe	VIc
	Abgese loam, 0 to 4 percent slopes	IIe	VIc

	Kappa alpha loan, 0 to 4 percent alpobee	11*	17*
	Kappa alpha loan, 0 to 4 percent alpobee	17*	17*
43	Kappa-alpha association		
42	Kappa alpha loan, 0 to 3 percent alpobee	17*	17*
41	Kappa alpha loan, 0 to 4 percent alpobee	17*	17*
40	Kappa alpha loan, 3 to 5 percent alpobee	17*	17*
	alpha loan, 8 to 12 percent alpobee	—	17?*
	Monticellonian, Kentucky alpobee, Kappa alpha [illegible]		
	Lexington Kappa alpha, alpha-alpha, Kappa alpha		
	Kappa Kappa alpha loan, 4 to 8 percent alpobee	17*	17*
	percent alpobee	17*	17*
	Kappa Kappa alpha loan, 3 to 5		
39	Baxter-Kappa-Monticellonian association		
	percent alpobee	17*	17*
	Bethel Kappa Kappa loan, 3 to 5		
	Baxter Kappa loan, 3 to 5 percent alpobee	17*	17*
38	Baxter-Bethel association		
	Kappa Kappa alpha loan, 3 to 5 percent alpobee	17*	17*
	alpobee	17*	17*
	Baxter Kappa alpha loan, 3 to 5 percent		
37	Baxter-Kappa association		
36	Baxter loan, 0 to 4 percent alpobee	17*	17*
35	Bethel Kappa loan, 4 to 8 percent alpobee	17*	17*
	alpobee	17*	17*
	Bethel Kappa Kappa loan, 3 to 4 percent		
34	Kappa alpha loan, 0 to 4 percent alpobee	17*	17*
33	Kappa Kappa alpha, Monticello, Kentucky		

Table 3 - Land capability class and subclass

Map Symbol	Soil Name	Irri-gated	Dry land
44	Bylo-Ramshorn association		
	Bylo gravelly fine sandy loam, 0 to 2 percent slopes	IVc	VIc
	Ramshorn gravelly sandy loam, 8 to 15 percent slopes	-	VIIs
45	Colona silty clay loam, 0 to 2 percent slopes	IVc	VIc
46	Durixerollic Calciorthids-Xerollic Calciorthids association		
	Durixerollic Calciorthids, loamy-skeletal, mixed, mesic, gravelly sandy clay loam, 2 to 8 percent slopes	IVe	VIIs
	Xerollic Calciorthids, loamy-skeletal, mixed, mesic, gravelly sandy loam, 2 to 8 percent slopes	IVe	VIIs
47	Durorthidic Xeric Torriorthents-Ramshorn association		
	Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid, loam, 2 to 4 percent slopes	IVe	VIc
	Ramshorn very gravelly loam, 2 to 8 percent slopes	-	VIIs
48	Fanu loam, 2 to 8 percent slopes	IVe	VIc
49	Fanu-Calciorthidic Haploxerolls association		
	Fanu gravelly fine sandy loam, 2 to 8 percent slopes	IVe	VIc
	Calciorthidic Haploxerolls, loamy-skeletal, mixed, frigid, gravelly loam, 2 to 8 percent slopes	IVe	VIIs
50	Haploxerollic Durargids, fine, montmorillonitic, frigid, gravelly loam, 2 to 4 percent slopes	VIe	VIc
51	Haploxerollic Durargids association		
	Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow, gravelly loam, 2 to 8 percent slopes	-	VIIs
	Haploxerollic Durargids, loamy-skeletal, mixed, mesic, gravelly loam, 2 to 8 percent slopes	-	VIIc

Table 3 - Land capability class and subclass

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Item	Soil Name	Drainage	Land Capability Class	Land Capability Subclass
41	DeKalb-Kanapora association Rolling gravelly fine sandy loam, 0 to 5 percent slopes	Well-drained	IVc	IVc
42	Kanapora gravelly sandy loam, 8 to 12 percent slopes	Well-drained	IVe	IVe
	Kanapora gravelly sandy loam, 12 to 20 percent slopes	-	VIIe	VIIe
43	Dekalb-Kello association Dekalb gravelly sandy clay loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
44	Kello gravelly sandy clay loam, 3 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
	Kello gravelly sandy clay loam, 8 to 12 percent slopes, moderately eroded	-	VIIe	VIIe
45	Kello-Dekalb association Kello gravelly fine sandy loam, 5 to 8 percent slopes	Well-drained	IVe	IVe
46	Kello gravelly fine sandy loam, 8 to 12 percent slopes	Well-drained	IVe	IVe
47	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, moderately eroded	-	VIIe	VIIe
48	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	-	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
49	Kello-Dekalb association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
50	Kello-Dekalb association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
51	Kello-Dekalb association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
52	Kello-Dekalb association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
53	Kello-Dekalb association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
54	Kello-Dekalb association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
55	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, moderately eroded	-	VIIe	VIIe
56	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	-	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
57	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
58	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
59	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
60	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
61	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
62	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
63	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
64	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
65	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
66	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
67	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
68	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
69	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
70	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
71	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
72	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
73	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
74	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
75	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
76	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
77	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
78	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
79	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
80	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
81	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
82	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
83	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
84	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
85	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
86	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
87	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
88	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
89	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
90	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
91	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
92	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
93	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
94	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
95	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
96	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
97	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
98	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
99	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
100	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
101	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
102	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
103	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
104	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
105	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
106	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
107	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
108	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
109	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
110	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
111	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
112	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
113	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
114	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
115	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
116	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
117	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
118	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
119	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
120	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
121	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
122	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
123	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
124	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
125	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
126	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
127	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
128	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
129	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
130	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
131	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
132	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
133	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
134	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
135	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
136	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
137	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
138	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
139	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
140	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
141	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
142	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
143	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
144	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
145	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
146	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
147	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
148	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
149	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
150	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
151	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
152	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
153	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
154	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
155	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
156	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
157	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
158	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
159	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
160	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
161	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
162	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
163	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
164	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
165	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
166	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
167	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
168	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
169	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
170	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
171	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
172	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
173	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
174	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
175	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
176	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
177	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
178	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
179	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
180	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
181	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
182	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
183	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
184	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
185	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
186	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
187	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
188	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
189	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
190	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
191	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
192	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
193	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
194	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
195	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
196	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
197	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
198	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
199	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
200	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
201	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 12 to 20 percent slopes, severely eroded	-	VIIe	VIIe
202	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, moderately eroded	Well-drained	IVe	IVe
203	Kello-Kello association Kello gravelly fine sandy loam, 5 to 8 percent slopes, severely eroded	Well-drained	IVe	IVe
	Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	-	VIIe	VIIe
204	Kello-Kello association Kello gravelly fine sandy loam, 8 to 12 percent slopes, severely eroded	Well-drained	IVe

Table 3 - Land capability class and subclass

Map Symbol	Soil Name	Irri-gated	Dry land
52	Haploxerollic Durargids-Abgese association		
	Haploxerollic Duragids, loamy-skeletal, mixed, mesic, gravelly loam, 2 to 8 percent slopes	-	VIIc
	Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow, gravelly loam, 2 to 8 percent slopes	-	VIIs
	Abgese gravelly sandy loam, 2 to 4 percent slopes	IIe	VIc
53	Haploxerollic Durorthids, loamy-skeletal, mixed, frigid, gravelly loam, 4 to 15 percent slopes	-	VIIs
54	Haploxerollic Durorthids-Abruptic Xerollic Durargids association		
	Haploxerollic Durorthids, loamy-skeletal, mixed, frigid, gravelly loam, 4 to 15 percent slopes	-	VIIs
	Abruptic Xerollic Durargids, clayey montmorillonitic, frigid, shallow, gravelly loam, 2 to 8 percent slopes	-	VIIs
55	Hopeka-Rock outcrop complex		
	Hopeka very gravelly loam, 8 to 30 percent slopes	-	VIIs
	Rock outcrop	-	-
56	Ilton gravelly sandy loam, 4 to 15 percent slopes	-	VIIs
57	Ilton gravelly sandy loam, 15 to 50 percent slopes	-	VIIe
58	Lien very gravelly sandy loam, 0 to 4 percent slopes	-	VIIs
59	Loza-Drewing association		
	Loza gravelly loam, 8 to 30 percent slopes	-	VIIe
	Drewing gravelly loam, 2 to 8 percent slopes	IVe	VIIs
60	Nark gravelly loam, 0 to 4 percent slopes	IVe	VIc
61	Nark gravelly loam, 4 to 8 percent slopes	IVe	VIc
62	Nuc very gravelly loam, 4 to 8 percent slopes	IVs	VIIs
63	Nuc association		
	Nuc gravelly loam, 4 to 15 percent slopes	IVe	VIc
	Nuc very gravelly loam, 30 to 50 percent slopes	-	VIIe

Table 3 - Land capability class and subclass

Page 4 of 5

Map symbol	Soil name	Texture	Land capability class	Land capability subclass
52	Haplaquents, loamy-skeletal, mixed, mesic, gravelly loam, 5 to 8 percent slopes	-	IVs	IVIIs
53	Haplaquents, loamy-skeletal, mixed, mesic, shallow, gravelly loam, 5 to 8 percent slopes	-	IVs	IVIIs
54	Haplaquents, Entisols, clayey, montmorillonitic, mesic, shallow, gravelly loam, 5 to 8 percent slopes	-	IVs	IVIIs
55	Haplaquents-Aquepts association			
	Haplaquents, loamy-skeletal, mixed, mesic, gravelly loam, 5 to 8 percent slopes	-	IVs	IVIIs
	Aquepts, gravelly sandy loam, 0 to 4 percent slopes	IIc	IIc	IIc
56	Haplaquents, Entisols, loamy-skeletal, mixed, frigid, gravelly loam, 4 to 12 percent slopes	-	IVs	IVIIs
57	Haplaquents, Entisols, loamy-skeletal, mixed, frigid, gravelly loam, 4 to 12 percent slopes	-	IVs	IVIIs
	Aquolls, clayey, montmorillonitic, frigid, shallow, gravelly loam, 5 to 8 percent slopes	-	IVs	IVIIs
58	Haplaquolls-Rock outcrop complex			
	Roberts very gravelly loam, 8 to 30 percent slopes	-	IVs	IVIIs
	Rock outcrop	-	-	-
59	Hiflon gravelly sandy loam, 4 to 12 percent slopes	-	IVs	IVIIs
60	Hiflon gravelly sandy loam, 12 to 20 percent slopes	-	IVs	IVIIs
61	Hiflon gravelly sandy loam, 0 to 4 percent slopes	IVs	IVc	IVc
62	Hiflon gravelly loam, 4 to 8 percent slopes	IVs	IVc	IVc
63	Hiflon gravelly loam, 8 to 12 percent slopes	IVs	IVc	IVc
	Hiflon very gravelly loam, 30 to 60 percent slopes	-	VIIs	VIIs

Table 3 - Land capability class and subclass

Map Symbol	Soil Name	Irri-gated	Dry land
64	Nuc-Xeric Torriorthents association		
	Nuc very gravelly loam, 4 to 15 percent slopes	IVs	VIIs
	Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow, very gravelly sandy loam, 4 to 15 percent slopes	-	VIIs
	Ramshorn gravelly sandy loam, 2 to 8 percent slopes	-	VIIs
	Rock outcrop	-	VIII
65	Nuc-Xerollic Haplargids association		
	Nuc very gravelly loam, 4 to 15 percent slopes	IVs	VIIs
	Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow, gravelly silty clay loam, 15 to 30 percent slopes	-	VIIs
66	Papoose gravelly sandy loam, 2 to 4 percent slopes	IVe	VIc
67	Penoyer silty clay loam, 0 to 2 percent slopes	IIc	VIc
68	Poorma very fine sandy loam, 0 to 4 percent slopes	IVe	VIc
69	Portmount loamy sand, 0 to 2 percent slopes	IIs	VIc
70	Typic Camborthids-Rock outcrop association		
	Typic Camborthids, loamy-skeletal, mixed, mesic, very stony fine sandy loam, 15 to 30 percent slopes	-	VIIs
	Rock outcrop	-	VIII
71	Typic Haplargids-Typic Camborthids association		
	Typic Haplargids, fine-loamy, mixed, mesic, gravelly sandy loam, 2 to 8 percent slopes	IVe	VIc
	Typic Camborthids, coarse-loamy, mixed, mesic, gravelly loam, 2 to 8 percent slopes	IVe	VIc
72	Typic Torriorthents, coarse-silty, mixed (calcareous), frigid, silt loam, 0 to 2 percent slopes	IVc	VIc
73	Typic Torriorthents-Bylo association		
	Typic Torriorthents, fine-loamy, mixed (calcareous), mesic, silty clay loam, 0 to 2 percent slopes	IVc	VIc
	Bylo silt loam, 0 to 2 percent slopes	IVc	VIc
74	Unsel gravelly sandy loam, 2 to 4 percent slopes	IVe	VIc

MAP	SOIL NAME	ASTED	LOAD
SYMBOL		TEXT-	DEN

TABLE 3 - LAND CAPABILITY CLASS AND SUBCLASS

48	FOXTROT LOAM, 0 TO 3 PERCENT SLOPES	IIe	VIc
49	FOXTROT LOAM, 3 TO 8 PERCENT SLOPES	IIe	VIc
50	TYPIC CAMPORTHIDS-TYPIC CAMPORTHIDS ASSOCIATION		
	TYPIC CAMPORTHIDS, LOAMY-SKELETAL, MIXED, MESIC (CALCAREOUS), NEARLY LEVEL LOAM, 0 TO 3 PERCENT SLOPES	IVc	VIc
	TYPIC CAMPORTHIDS, LOAMY-SKELETAL, MIXED, MESIC, GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES	IVe	VIc
	ROCK OUTCROP	-	VIIIs
51	TYPIC HAPLARGIDS-TYPIC CAMPORTHIDS ASSOCIATION		
	TYPIC HAPLARGIDS, FINE-LOAMY, MIXED, MESIC, GRAVELLY SANDY LOAM, 3 TO 8 PERCENT SLOPES	IVe	VIc
	TYPIC CAMPORTHIDS, COARSE-LOAMY, MIXED, MESIC, GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES	IVe	VIc
52	TYPIC TORRIORTHENTS-TYPIC CAMPORTHIDS ASSOCIATION		
	TYPIC TORRIORTHENTS, SANDY-SKELETAL, MIXED (CALCAREOUS), NEARLY LEVEL LOAM, 0 TO 3 PERCENT SLOPES	IVc	VIc
	TYPIC CAMPORTHIDS, LOAMY-SKELETAL, MIXED, MESIC, HILLY LOAM, 0 TO 3 PERCENT SLOPES	IVe	VIc
53	TYPIC TORRIORTHENTS-TYPIC CAMPORTHIDS ASSOCIATION		
	TYPIC TORRIORTHENTS, COARSE-SILTY, MIXED (CALCAREOUS), NEARLY LEVEL LOAM, 0 TO 3 PERCENT SLOPES	IVc	VIc
	TYPIC CAMPORTHIDS, COARSE-LOAMY, MIXED, MESIC, GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES	IVe	VIc
54	MAC-XERIC TORRIORTHENTS ASSOCIATION		
	MAC VERY GRAVELLY LOAM, 4 TO 12 PERCENT SLOPES	IVs	VIIs
	XERIC TORRIORTHENTS, LOAMY-SKELETAL, MIXED (CALCAREOUS), GRAVELLY, ASHFALL COVER, 0 TO 3 PERCENT SLOPES	-	VIIs
	MANSKOW GRAVELLY SANDY LOAM, 3 TO 8 PERCENT SLOPES, 4 TO 11 PERCENT SLOPES	-	VIIs
	ROCK OUTCROP	-	VIIIs
55	MAC-XERIC LAPLANDIDS ASSOCIATION		
	MAC VERY GRAVELLY LOAM, 4 TO 12 PERCENT SLOPES	IVs	VIIs
	XERIC TORRIORTHENTS, LOAMY-SKELETAL, MIXED (CALCAREOUS), GRAVELLY, ASHFALL COVER, 0 TO 3 PERCENT SLOPES	-	VIIs
	LONITAS, ERIEZY, ASHFALL GRAVELLY WITH CLAY LOAM, 0 TO 3 PERCENT SLOPES	-	VIIIs
56	PENROSE GRAVELLY SANDY LOAM, 3 TO 8 PERCENT SLOPES	IVs	VIc
57	PENROSE WITH CLAY LOAM, 0 TO 3 PERCENT SLOPES	IIc	VIc
58	FOXTROT LOAM, 0 TO 3 PERCENT SLOPES	IIs	VIc
59	TYPIC CAMPORTHIDS-ROCK OUTCROP ASSOCIATION		
	TYPIC CAMPORTHIDS, LOAMY-SKELETAL, MIXED, MESIC (CALCAREOUS), VERY STONY FINE SANDY LOAM, 12 TO 30 PERCENT SLOPES	-	VIIs
	ROCK OUTCROP	-	VIIIs
60	TYPIC CAMPORTHIDS-ROCK OUTCROP ASSOCIATION		
	TYPIC CAMPORTHIDS, LOAMY-SKELETAL, MIXED, MESIC, NEARLY LEVEL LOAM, 0 TO 3 PERCENT SLOPES	IVe	VIc
	ROCK OUTCROP	-	VIIIs

Table 3 - Land capability class and subclass

Map Symbol	Soil Name	Irri-gated	Dry land
75	Xerertic Camborthids, fine, montmorillonitic, frigid, clay, 4 to 15 percent slopes	IVe	VIs
76	Xerertic Haplargids, clayey, montmorillonitic, frigid, shallow, clay loam, 2 to 8 percent slopes	IVe	VIIs
77	Xerertic Haplargids-Drewing association		
	Xerertic Haplargids, clayey, montmorillonitic, frigid, shallow, clay loam, 4 to 8 percent slopes	IVe	VIIs
	Drewing gravelly loam, 4 to 8 percent slopes	IVe	VIIs
	Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow, gravelly clay loam, 8 to 15 percent slopes	IVe	VIIs
78	Xeric Torriorthents-Xerollic Durargids complex		
	Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow, gravelly loam, 4 to 15 percent slopes	IVs	VIIs
	Xerollic Durargids, loamy-skeletal, mixed, frigid, gravelly loam, 4 to 15 percent slopes	-	-
79	Xerollic Durargids, fine, montmorillonitic, mesic, gravelly loam, 0 to 4 percent slopes	IVe	VIIs
80	Xerollic Durargids-Ramshorn association		
	Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow, gravelly loam, 0 to 4 percent slopes	-	VIIs
	Ramshorn very gravelly very fine sandy loam, 0 to 4 percent slopes	-	VIIs
81	Xerollic Durorthids, loamy-skeletal, mixed, mesic, shallow, gravelly loam, 4 to 15 percent slopes	-	VIIs
82	Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow, gravelly silty clay loam, 4 to 30 percent slopes	-	VIIe
83	Xerollic Durorthids-Durixerollic Calciorthids association		
	Xerollic Durorthids, coarse-loamy, mixed, frigid, shallow, gravelly loam, 2 to 8 percent slopes	IVe	VIIs
	Durixerollic Calciorthids, loamy-skeletal, mixed, frigid, gravelly loam, 2 to 8 percent slopes	IVe	VIIs
	Haploxerollic Durorthids, loamy-skeletal, mixed, frigid, gravelly loam, 0 to 4 percent slopes	-	VIIs

Table 3 - Land capability class and symbols

Page 3 of 7

Map symbol	Soil Name	Capability class	Land type
57	Keroltic Inceptisols, fine, montmorillonitic, mesic,		
	friable, drywell loam, 4 to 12 percent slopes	IVe	IIIs
58	Keroltic Durixeralfs, loamy-skeletal, mixed, frigid,		
	aquollow, drywell loam, 0 to 4 percent slopes	-	IIIs
	Aquandoxic very drywell very fine sandy loam,		
	0 to 4 percent slopes	-	IIIs
59	Keroltic Durixeralfs, loamy-skeletal, mixed, mesic,		
	aquollow, drywell loam, 4 to 12 percent slopes	-	IIIs
60	Keroltic Haplargids, clayey-skeletal, montmorill-		
	onitic, frigid, aquollow, drywell silty clay		
	loam, 4 to 30 percent slopes	-	IIIs
61	Keroltic Durixeralfs-Durixeroltic Calciorthids		
	association		
	Keroltic Durixeralfs, coarse-loamy, mixed, frigid,		
	aquollow, drywell loam, 2 to 8 percent slopes	IVe	IIIs
	Durixeroltic Calciorthids, loamy-skeletal, mixed,		
	frigid, drywell loam, 2 to 8 percent slopes	IVe	IIIs
	Durixeroltic Durorthids, loamy-skeletal, mixed,		
	frigid, drywell loam, 0 to 4 percent slopes	-	IIIs
62	Keroltic Durixeralfs, loamy-skeletal, mixed, frigid,		
	drywell loam, 0 to 4 percent slopes	IVe	IIIs
63	Keroltic Durorthids-Durixeroltic Calciorthids		
	association		
	Keroltic Durorthids, coarse-loamy, mixed, frigid,		
	aquollow, drywell loam, 2 to 8 percent slopes	IVe	IIIs
	Durixeroltic Calciorthids, loamy-skeletal, mixed,		
	frigid, drywell loam, 2 to 8 percent slopes	IVe	IIIs
	Durixeroltic Durorthids, loamy-skeletal, mixed,		
	frigid, drywell loam, 0 to 4 percent slopes	-	IIIs
64	Keroltic Durixeralfs, loamy-skeletal, mixed,		
	frigid, drywell loam, 4 to 12 percent slopes	IVe	IIIs
65	Keroltic Haplargids, clayey-skeletal, montmorill-		
	onitic, frigid, aquollow, drywell silty clay		
	loam, 4 to 30 percent slopes	-	IIIs
66	Keroltic Durorthids-Durixeroltic Calciorthids		
	association		
	Keroltic Durorthids, coarse-loamy, mixed, frigid,		
	aquollow, drywell loam, 2 to 8 percent slopes	IVe	IIIs
	Durixeroltic Calciorthids, loamy-skeletal, mixed,		
	frigid, drywell loam, 2 to 8 percent slopes	IVe	IIIs
	Durixeroltic Durorthids, loamy-skeletal, mixed,		
	frigid, drywell loam, 0 to 4 percent slopes	-	IIIs

Table 3 - Land capability class and subclass

Map Symbol	Soil Name	Irri-gated	Dry land
84	Xerollic Haplargids, fine-loamy, mixed, frigid, coarse sandy loam, 4 to 8 percent slopes	IVe	VIs
85	Xerollic Haplargids, fine-loamy, mixed, mesic, gravelly loam, 2 to 8 percent slopes	IVe	VIc
86	Xerollic Paleargids, clayey-skeletal, montmorillonitic, mesic, very stony gravelly sandy loam, 4 to 8 percent slopes	-	VIIs
87	Yody-Abgese association		
	Yody gravelly loamy sand, 2 to 8 percent slopes	IVe	VIc
	Abgese gravelly loamy sand, 2 to 8 percent slopes	IIIe	VIs
88	Yody-Bravane association		
	Yody stony loamy sand, 4 to 8 percent slopes	IVe	VIc
	Bravane stony loamy sand, 4 to 8 percent slopes	IVe	VIs

TABLE 5 - Land capability class and subclass

Map symbol	Soil name	Page	Last described
		1 to 1	1931-
AfA	Acrotilla fine-loamy, mixed, mesic.		
	coarse sandy loam, 0 to 2 percent slopes	IVe	1976
AfC	Acrotilla fine-loamy, mixed, mesic.		
	gravelly loam, 2 to 8 percent slopes	IV^{s}	1976
AgB	Acrotilla Paleargids, clayey-skeletal, montmorril-		
	lonitic, mesic, very stony gravelly sandy		
	loam, 0 to 8 percent slopes	-	XIII^{s}
AkB	Koch-Appgate association		
	Koch gravelly loamy sand, 2 to 8 percent slopes	IVe	VIc
	Appgate gravelly loamy sand, 2 to 8 percent		
	slopes	IIIe	VIs
AkC	Koch-Terrace association		
	Koch stony loamy sand, 0 to 8 percent slopes	IV^{s}	VIc
	Terrace stony loamy sand, 0 to 8 percent slopes	IV^{s}	VIs

ENGINEERING USES OF THE SOILS

This section is useful to those who need information about soils used as structural material or as foundation upon which structures are built. Among those who can benefit from this section are planning commissions, town and city managers, land developers, engineers, contractors, and farmers.

Among properties of soils highly important in engineering are permeability, strength, compaction characteristics, soil drainage condition, shrink-swell potential, grain size, plasticity, and soil reaction. Also important are depth to the water table, depth to bedrock, and soil slope. These properties, in various degrees and combinations, affect construction and maintenance of roads, airports, pipelines, foundations for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

ENGINEERING USES OF ARTIFICIAL SOILS

This section is meant to cover what need information about soils used as structural material or as foundation upon which structures are built. Among those who can benefit from this section are highway contractors, land developers, engineers, contractors, airports, town and city managers, land developers, engineers, contractors, and farmers.

Among properties of soils highly important in engineering are permeability, strength, compaction characteristics, soil drainage condition, shrink-swell potential, frost size, plasticity, and soil reaction. Also important are depth to the water table, depth to bedrock and soil slope. These properties, in various depths and compinations, affect construction and maintenance of roads, airports, pipelines, foundations for small

Information in this section of the soil survey can be helpful to those who --

1. Select potential residential, industrial, commercial, and recreational areas.
2. Evaluate alternate routes for roads, highways, pipelines, and underground cables.
3. Seek sources of gravel, sand, or clay.
4. Plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for controlling water and conserving soil.
5. Correlate performance of structures already built with properties of the kinds of soil on which they are built, for the purpose of predicting performance of structures on the same or similar kinds of soil in other locations.
6. Predict the trafficability of soils for cross-country movement of vehicles and construction equipment.
7. Develop preliminary estimates pertinent to construction in a particular area.

Most of the information in this section is presented in tables 4 and 5, which show, respectively, several estimated soil properties significant to engineering; and interpretations for various engineering uses.

This information, along with the soil map and other parts of this publication, can be used to make interpretations in addition to those given in tables 4 and 5, and it also can be used to make other useful maps.

This information, however, does not eliminate need for further investigations at sites selected for engineering works, especially works that involve heavy loads or that require excavations to depths greater than those shown in the tables, generally depths greater than six feet. Also, inspection of sites, especially the small ones, is needed because many delineated areas of a given soil mapping units may contain small areas of other kinds of soil that have strongly contrasting properties and different suitabilities or limitations for soil engineering.

Some of the terms used in this soil survey have special meaning to soil scientists that is not known to all engineers. The Glossary defines many of these terms commonly used in soil science.

Engineering Soil Classification Systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified system used by the SCS engineers, Department of Defense, and others, and the AASHO system adopted by the American Association of State Highway Officials.

In the Unified system soils are classified according to particle size distribution, plasticity, liquid limit, and organic matter. Soils are grouped in 15 classes. There are eight classes of coarse grained soils identified as: GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine grained soils identified as: ML, CL, OL, MH, CH, and OH; and one class of highly organic soils identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes; for example, ML-CL.

Fundamental soil classification systems

Many definitions of terms commonly used in soil science.

The Glossary to soil scientists that is not known to all engineers. Some of the terms used in this soil survey have especial meanings peculiar to soil mapping units with which engineers should be familiar. A glossary of other kinds of soil that have actually contrasting small areas or differ in characteristics or limitations for soil engineering properties and different suitabilities or limitations for soil engineering.

Some information, however, does not eliminate need for further investigations at sites selected for engineering works, especially for works that involve heavy loads or that require excavations to depths greater than those shown in the tables, generally depths greater than six feet. Also, inspection of sites, especially the small ones, is needed because many deficiencies not shown in a given soil mapping unit may control the suitability for use of a site.

The two systems most commonly used in classifying samples of soils for engineering soil classification systems

for engineering are the Unified system used by the SCS engineers, Department of Defense, and others, and the AASHO system adopted by the American Association of State Highway Officials.

In the Unified system soils are classified according to particle size distribution, plasticity, liquid limit, and organic matter. Soils are grouped in 15 classes. There are eight classes of coarse grained soils identified as: GW, GP, GM, GC, SW, SP, SM, and SC: six classes of fine grained soils identified as: ML, CL, OL, MH, CH, and OH: and one class of highly organic soils identified as Pt. Soils on the boundary between two classes are designated by symbols for both classes: for example, SM-CL.

The AASHO system is used to classify soils according to those properties that affect use in highway construction and maintenance. In this system, a soil is placed on one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A-1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A-7, are clay soils that have low strength when wet and that are poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A-1, A-2, and A-7 groups are divided as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The estimated classification, without group index numbers, is given in table 4 for all soils mapped in the survey area.

USDA texture is determined by the relative proportions of sand, silt, and clay in soil material that is less than 2.0 millimeters in diameter. "Sand," "silt," "clay," and some of the other terms used in the USDA textural classification are defined in the Glossary.

The AASHO system is used to classify soils according to those properties that affect use in highway construction and maintenance. In this system, a soil is placed in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. In Group A-1 are gravelly soils of high quality as a subgrade material that is less than 0.5 millimeters in size, and clay in soil material that is less than 0.0 millimeters in size. Within Group A-1, the specific proportions of sand, gravel, and stone fragments are specified. The remaining six groups are classified in descending order according to their suitability as subgrade material. Poor materials are in Group A-7. At the other extreme, in Group A-1, are clay soils that have low strength when wet and that are incorrect soils for subgrade. Where laboratory data are available to indicate a finer breakdown, the A-1, A-3, and A-2 groups are divided as follows: A-1-a, A-1-b, A-3, A-2-4, A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, and A-7. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group index numbers range from 0 for the best material to 20 or more for the poorest. The combined classification, without group index numbers, is given in table 4 for all soils mapped in the survey area.

Most engineers in determining by the analytic properties of sand, silt, and clay in soil material that is less than 2.0 millimeters in diameter, and some of the other terms used in the AASHO textural classification are defined in the Glossary.

Soil Properties Significant to Engineering

Several estimated soil properties significant in engineering are given in table 4. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance for soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kinds of soil in other areas. Following are explanations of some of the columns in table 4.

Depth to hardpan or bedrock is distance from the surface of the soil to the highest level that ground water reaches in the soil in most years.

Soil texture is described in the standard terms used by the Department of Agriculture. These terms take into account relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that contains 7 to 27 percent clay, 20 to 50 percent silt, and less than 52 percent sand. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, as for example, "gravelly loamy sand." "Sand," "silt," "clay," and some of the other terms used in USDA textural classification are defined in the Glossary of this soil survey.

Soil properties significant to engineering

Several estimated soil properties significant in engineering are given in table 4. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance for soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kinds of soil in other areas. Following are explanations of some of the columns in table 4.

Depth to bedrock or hardpan.—Depth is distance from the surface of the soil to the highest level that ground water rises in the soil at some time of the year, if it does. Bedrock is described in the standard terms used by the Department of Agriculture. These terms take into account relative permeability or degree of cementation, as well as hardness. Bedrock is assumed to be impervious to water and roots unless cracked or otherwise modified, as by solution. Hardpan is a dense, compact, relatively impervious layer in the soil that is not bedrock. It may be cemented with silica, iron, lime, or other substances. Hardpan may be dense enough to resist the penetration of roots and water almost entirely, or it may be porous enough to allow some movement of water and roots. Hardpan is assumed to be unbroken. Depth to hardpan or bedrock

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semi-solid to a plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes from the semi-solid to plastic state; and the liquid limit, from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. Liquid limit and plasticity index are estimated in table 4.

Permeability is that quality of a soil that enables it to transmit water or air. It is estimated on basis of those soil characteristics observed in the field, particularly structure and texture. The estimates in table 4 do not take into account lateral seepage or such transient soil features as plowpans and surface crusts.

Available water capacity is the ability of soils to hold water for use by most plants. It is commonly defined as the difference between the amount of water in the soil at field capacity and the amount at the wilting point of most crop plants.

Reaction is the degree of acidity or alkalinity of a soil, expressed in pH values. The pH value and terms used to describe soil reaction are explained in the Glossary.

Salinity refers to the amount of soluble salts in the soil. It is expressed as the electrical conducitivity of the saturation extract in mmhos per centimeter at 25° C. Salinity affects the suitability of a soil for crop production, its stability when used as construction material, and its corrosiveness to metals and concrete.

Shrink-swell potential is the relative change in volume to be expected of soil material with changes in moisture content, that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. Extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils causes much damage to building foundations, roads, and other structures. A high shrink-swell potential indicates a hazard to maintenance of structures built in, on, or with material having this rating.

Frost action potential is the relative change in soil volume on freezing of a wet soil. Ice lenses form, causing the soil to expand and lift upward. The combination of soil heaving and accumulations of excess moisture in the soil as the ice melts results in loss of soil strength.

structure built in, or, of with material placed into voids.

Frost action performed is the relative change in soil volume on freezing of a wet soil. Ice lenses form, causing the soil to expand and lift upward. The combination of soil pervious bars accumulations of excess moisture in the soil as the ice melts results in loss of soil strength.

Shrink-swell performed is the relative change in volume to be expected of soil material with changes in moisture content, that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. Extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils causes much damage to building foundations, roads, and other structures. A high shrink-swell potential indicates a need to maintenance of

Salinity refers to the amount of soluble salts in the soil. It is expressed as the electrical conductivity of the saturation extract in mmhos per centimeter at 25° C. Salinity affects the suitability of a soil for crop production, its stability when used as construction material, and its corrosiveness to metals and concrete.

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Corrosivity pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel. Rate of corrosion of uncoated steel is related to soil properties such as drainage, texture, total acidity, and electrical conductivity of the soil material. Installations of uncoated steel that intersect soil boundaries or soil horizons are more susceptible to corrosion than installation entirely in one kind of soil or in one soil horizon. A corrosivity rating of low means that there is a low probability of soil-induced corrosion damage. A rating of high means that there is a high probability of damage, so that protective measures for steel should be used to avoid or minimize damage.

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Table 4 - Estimated engineering properties of soils
(Absence of data indicates that the soil is too variable or that no estimate was made.
The symbol > means greater than; and the symbol < means less than).

Soil series and map symbol (1)	Depth to --- Hardpan or bedrock (Ft.) (2)	Depth to --- Seasonal high water table (Ft.) (3)	13/ Depth from surface (Ins.) (4)	Classification USDA texture (5)	Classification UNIFIED (6)	Classification AASHO (7)	Coarse fraction greater than 3 inches (Pct.) (8)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.) (9)	No. 10 (2.0 mm.) (10)	No. 40 (0.42 mm.) (11)	No. 200 (0.074 mm.) (12)	Liquid limit (13)	Plasticity index (14)	Permeability (Ins./Hr.) (15)	Available water capacity (Ins./In.) (16)	Reaction (pH) (17)	Salinity ($EC \times 10^3$ @ 25° C.) (18)	Shrink-swell potential (19)	Frost action potential (20)	Corrosivity (Untreated steel) (21)
Abgese: 22, 23, 24, 25, 26. For properties of Portmount part of 24, Durixerollic Calciorthids part of 25, and Haploxerollic Durargids parts of 26, see respective soil series and soil families.	> 5	1/	0-5	Gravelly sandy loam. 2/	SM	A-1 or A-2	0-5	75-85	70-80	45-55	20-30	15-25	NP-5	0.6-2.0	0.08-0.10	7.9-8.4	< 2	Low	Moderate	Moderate
			5-20	Gravelly sandy clay loam.	SC	A-2	0-5	80-90	75-85	60-70	30-40	25-35	15-20	0.6-2.0	0.16-0.18	7.9-8.4	< 2	Moderate	Moderate	High
			20-60	Stratified gravelly sandy loam and gravelly loamy sand.	GM	A-1	0-5	45-55	40-50	25-35	10-15	10-20	NP	2.0-6.0	0.07-0.08	7.9-9.0	2-4	Low	Low	High
Abruptic Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, shallow: 27.	0.7-1.2 3/	1/	0-10	Stony clay.	CH	A-7	50-70	70-80	60-70	55-65	50-60	50-65	35-45	0.06-0.20	0.06-0.08	7.9-8.4	< 2	High	Moderate	High
			10-24	Indurated silica-cemented hardpan.																
			24	Dacite bedrock.																
Abruptic Xerollic Durargids, clayey, montmorillonitic, frigid, shallow.	0.7-1.6 3/	1/	0-9	Clay loam	CL or CH	A-7	0	90-100	90-100	85-95	65-75	45-55	30-40	0.06-0.20	0.15-0.17	7.9-8.4	< 2	High	Moderate	High
			9-15	Indurated silica-cemented hardpan.																
			15	Weathered tuff bedrock.																
Ansping: 28, 29. For Aridic Calcixerolls and Calciorthidic Haploxerolls parts of 29, see respective soil families.	4-5 4/ 5/	1/	0-20	Gravelly loam.	GM or GC	A-2	5-20	60-80	55-65	45-55	35-45	25-35	5-15	0.2-0.6	0.10-0.12	7.9-8.4	< 2	Low	Moderate	High
			20-39	Very gravelly clay loam.	GC	A-2	5-20	30-40	25-35	20-30	15-25	30-40	10-15	0.06-0.20	0.06-0.07	7.9-8.4	2-4	Moderate	Low	High
			39-50	Very gravelly loam.	GM	A-1	5-10	25-35	20-30	15-25	10-15	25-35	NP	0.06-0.20	0.05-0.06	7.9-8.4	2-4	Low	Low	High
			50-62	Strongly cemented lime-silica hardpan.																

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Table 4 - Estimated engineering properties of soils
(Absence of data indicates that the soil is too variable or that no estimate was made.
The symbol > means greater than; and the symbol < means less than).

Soil series and map symbol	Depth to --- Hardpan or bedrock (Ft.)	Depth to --- Seasonal high water table (Ft.)	13/ Depth from surface (Ins.)	Classification: USDA texture	Classification: UNIFIED	Classification: AASHO	Coarse fraction greater than 3 inches (Pct.)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability (Ins./Hr.)	Available water capacity (Ins./In.)	Reaction (pH)	Salinity (ECx10^3 @ 25° C.)	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Aridic Calci-xerolls, fine-carbonatic, frigid.	2.8-3.8 6/	1/	0-12	Gravelly clay loam.	GC, SC or CL	A-6	0-5	70-80	65-75	60-70	45-55	25-35	15-25	0.2-0.6	0.14-0.16	7.9-8.4	< 2	Moderate	High	High
			12-30	Gravelly clay.	CL or CH	A-7	0	65-75	60-70	55-65	50-60	45-55	30-40	0.2-0.6	0.13-0.15	7.9-8.4	< 2	High	Moderate	High
			30-60	Shale weathering to clay.																
Aridic Calci-xerolls, loamy-skeletal, mixed, frigid, shallow: 30. For Fanu part of 30, see Fanu series.	1.0-1.5 7/	1/	0-6	Gravelly loam.	SM or GM	A-2	0-10	70-80	65-75	60-70	40-50	25-35	NP-5	0.6-2.0	0.11-0.12	7.9-8.4	< 2	Low	Moderate	Moderate
			6-15	Very gravelly loam.	GM-GC or GC	A-1 or A-2	0-10	25-35	20-30	15-25	10-20	25-35	5-10	0.6-2.0	0.06-0.08	7.9-8.4	< 2	Low	Low	High
			15-48	Weathered tuff bedrock.																
Aridic Duri-xerolls, fine-loamy, mixed, frigid: 31.	2.2-3.0 3/	1/	0-4	Gravelly loam.	SM or ML	A-4	0	75-85	70-80	65-75	45-55	25-35	NP-5	0.6-2.0	0.12-0.14	6.6-7.3	< 2	Low	High	Moderate
			4-17	Gravelly clay loam.	CL	A-6	0	80-90	70-85	65-75	50-60	30-40	15-25	0.2-0.6	0.14-0.16	6.6-7.3	< 2	Moderate	High	Moderate
			17-35	Very gravelly sandy loam.	GP-GM	A-1	0	20-30	15-25	10-15	5-10	15-20	NP	6.0-20	0.05-0.06	7.4-9.0	2-4	Low	Low	High
			35-42	Strongly cemented lime-silica hardpan.																
Belmill: 32, 33.	> 5	1/	0-3	Gravelly sandy loam.	SM	A-1 or A-2	0	70-80	65-75	40-50	20-30	15-25	NP	2.0-6.0	0.08-0.10	6.6-7.3	< 2	Low	High	Moderate
			3-13	Gravelly loam	SM or SC	A-1, A-4 or A-6	0	60-70	55-65	45-55	30-40	20-30	5-15	0.6-2.0	0.10-0.12	6.6-7.3	< 2	Moderate	High	High
			13-30	Very gravelly sandy loam.	GM-GC or GM	A-1 or A-2	0	30-40	25-35	15-25	10-15	10-20	NP-10	2.0-6.0	0.06-0.07	6.6-8.4	< 2	Low	Low	High
			30-50	Very gravelly loamy sand.	GP-GM	A-1	0	20-30	15-25	10-20	5-10	10-20	NP	6.0-20	0.05-0.06	7.9-8.4	< 2	Low	Low	High
Bravane	2.2-3.0 3/	1/	0-5	Stony sandy loam.	SM-SC or SC	A-2	0-10	60-70	50-60	30-40	15-20	15-25	5-10	2.0-6.0	0.08-0.10	7.9-8.4	< 2	Low	Moderate	High
			5-24	Clay.	CL or CH	A-7	0-10	85-95	80-90	75-85	65-75	45-60	30-40	0.06-0.2	0.15-0.17	7.9-8.4	< 2	High	Moderate	High
			24-40	Lime-silica cemented hardpan.																

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Table 4 - Estimated engineering properties of soils
(Absence of data indicates that the soil is too variable or that no estimate was made.
The symbol > means greater than; and the symbol < means less than).

Soil series and map symbol (1)	Depth to --- Hardpan or bedrock (Ft.) (2)	Depth to --- Seasonal high water table (Ft.) (3)	13/ Depth from surface (Ins.) (4)	Classification USDA texture (5)	Classification UNIFIED (6)	Classification AASHO (7)	Coarse fraction greater than 3 inches (Pct.) (8)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.) (9)	No. 10 (2.0 mm.) (10)	No. 40 (0.42 mm.) (11)	No. 200 (0.074 mm.) (12)	Liquid limit (13)	Plasticity index (14)	Permeability (Ins./Hr.) (15)	Available water capacity (Ins./In.) (16)	Reaction (pH) (17)	Salinity (ECx10^3 @ 25° C.) (18)	Shrink-swell potential (19)	Frost action potential (20)	Corrosivity (Untreated steel) (21)
Bruffy: 34.	> 5	1/	0-20	Silt loam.	ML	A-4 or A-5	0	90-100	90-100	85-95	70-85	35-45	5-10	0.2-0.6	0.15-0.17	7.9-8.4	< 2	Low	High	High
			20-45	Gravelly sandy clay loam.	SC	A-6	0	70-80	65-75	55-65	30-40	25-35	20-30	0.2-0.6	0.13-0.15	7.9-8.4	2-4	Moderate	High	High
Buster: 35, 36, 37, 38, 39. For Handy part of 37, Pedoli part of 38, and Handy and Xerollic Haplargids parts of 39, see respective soil series and soil families.	> 5	1/	0-3	Gravelly loam.	SC-SM or SC	A-4	0-2	70-80	65-75	55-65	40-50	20-30	5-10	0.6-2.0	0.12-0.13	7.9-8.4	< 2	Low	High	Moderate
			3-32	Gravelly sandy clay loam.	SC	A-2	0-2	70-80	65-75	50-60	25-35	25-35	15-25	0.2-0.6	0.13-0.14	7.9-8.4	< 2	Moderate	High	High
			32-60	Gravelly sandy loam.	SM	A-2	0-2	70-80	65-75	40-50	20-30	15-25	NP	0.6-2.0	0.08-0.10	7.9-8.4	< 2	Low	Low	High
Bylo: 40, 41, 42, 43, 44. For Abgese part of 43, and Ramshorn part of 44, see respective series.	> 5	1/	0-4	Silt loam.	ML or CL	A-6 or A-7	0	95-100	95-100	85-95	70-90	35-50	10-20	0.2-0.6	0.15-0.17	7.9-8.4	< 2	Low	High	High
			4-34	Silty clay loam.	ML, CL or MH-CH	A-7	0	95-100	95-100	90-100	80-95	45-55	15-25	0.2-0.6	0.15-0.17	7.9-8.4	2-4	Moderate	High	High
			34-60	Silt loam.	ML or CL	A-6 or A-7	0	95-100	95-100	85-95	70-90	35-50	10-20	0.2-0.6	0.15-0.17	7.9-8.4	4-8	Low	High	High
Calciorthidic Haploxerolls, loamy-skeletal, mixed, frigid.	> 5	1/	0-14	Loam.	ML or ML-CL	A-4	0-2	85-95	85-90	70-80	50-60	25-35	5-10	0.6-2.0	0.14-0.15	7.9-8.4	< 2	Moderate	High	High
			14-60	Very gravelly sandy loam.	GP-GM	A-1	0-5	20-30	15-20	10-15	5-10	20-30	NP	2.0-6.0	0.05-0.07	7.9-8.4	< 2	Low	Low	High
Calciorthidic Haploxerolls, fine, montmorillonitic, frigid.	> 5	1/	0-60	Clay loam.	CL or CL-CH	A-7	0	95-100	95-100	85-95	65-75	40-50	25-35	0.2-0.6	0.15-0.17	7.9-8.4	< 2	High	Moderate	High
Colona: 45.	> 5	1/	0-13	Silty clay loam.	CL	A-6 or A-7	0	95-100	95-100	90-95	85-95	35-45	25-35	0.2-0.6	0.15-0.17	7.9-9.0	2-4	Moderate	High	High
			13-60	Silty clay.	CH or MH	A-7	0	95-100	95-100	90-95	85-90	55-65	35-45	0.06-0.2	0.15-0.16	8.5-9.0	8-15	High	Moderate	High
Drewing	0.8-1.5 3/	1/	0-11	Gravelly clay loam.	GC	A-2 or A-6	0-5	50-60	45-55	40-50	30-40	20-30	10-15	0.2-0.6	0.08-0.10	7.9-8.4	< 2	Moderate	High	High
			11-60	Weakly to strongly cemented lime-silica hardpan.																

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Table 4 - Estimated engineering properties of soils
(Absence of data indicates that the soil is too variable or that no estimate was made.
The symbol > means greater than; and the symbol < means less than).

Soil series and map symbol	Depth to --- Hardpan or bedrock (Ft.)	Depth to --- Seasonal high water table (Ft.)	13/ Depth from surface (Ins.)	Classification: USDA texture	Classification: UNIFIED	Classification: AASHO	Coarse fraction greater than 3 inches (Pct.)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability (Ins./Hr.)	Available water capacity (Ins./In.)	Reaction (pH)	Salinity (ECx10³ @ 25° C.)	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Durixerollic Calciorthids, loamy-skeletal, mixed, frigid.	> 5	1/	0-10	Gravelly loam.	SM-SC or SC	A-4	0	65-75	55-65	45-55	35-45	25-30	5-10	0.6-2.0	0.10-0.11	7.9-9.0	< 2	Low	High	High
			10-36	Very gravelly sandy loam.	GM	A-1	0	30-40	25-35	15-20	10-15	15-25	NP	2.0-6.0	0.05-0.06	8.5->9.0	2-4	Low	Low	High
			36-56	Very gravelly loamy sand.	GP-GM	A-1	0	20-30	15-25	10-20	5-10	10-20	NP	6.0-20	0.05-0.06	> 9.0	4-8	Low	Low	High
Durixerollic Calciorthids, loamy-skeletal, mixed, mesic: 46. For Xerollic Calciorthid part of 46, see respective soil family.	> 5	1/	0-20	Very gravelly loam.	GM	A-1 or A-2	0-10	30-40	25-35	20-30	15-20	20-30	0-5	0.6-2.0	0.07-0.08	7.9-8.4	< 2	Low	Low	High
			20-60	Very gravelly sandy loam.	GM	A-1	0-10	30-40	25-35	15-20	10-15	15-25	NP	2.0-6.0	0.05-0.06	7.9-8.4	2-4	Low	Low	High
Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid: 47. For Ramshorn part of 47, see respective soil series.	> 5	1/	0-42	Loam.	ML or CL	A-4	0	85-95	80-85	70-80	50-60	25-35	5-10	0.6-2.0	0.13-0.14	7.9-8.4	2-4	Low	High	High
			42-65	Gravelly fine sandy loam.	SM	A-2	0-5	70-80	65-75	45-55	25-35	20-30	NP	2.0-6.0	0.08-0.10	7.9-8.4	2-4	Low	Moderate	High
Fanu: 48, 49. For Calciorthidic Haploxerolls part of 49, see respective series.	> 5	1/	0-9	Loam.	ML or CL	A-4	0	95-100	95-100	80-90	60-70	25-35	5-10	0.6-2.0	0.13-0.15	7.9-8.4	< 2	Moderate	High	High
			9-20	Clay loam.	CL	A-6	0	95-100	95-100	85-95	65-75	30-40	15-20	0.2-0.6	0.16-0.18	7.9-8.4	< 2	Moderate	High	High
			20-64	Loam.	CL or ML-CL	A-4	0	95-100	90-95	75-85	55-65	20-30	5-10	0.6-2.0	0.13-0.15	7.9-8.4	< 2	Moderate	High	High
Handy	> 5	1/	0-22	Clay loam.	CL	A-6	5-10	80-90	80-85	70-80	60-65	30-40	15-25	0.2-0.6	0.15-0.17	7.9-8.4	< 2	High	High	High
			22-34	Gravelly sandy loam.	SM	A-2	5-10	70-80	70-75	40-50	20-30	15-25	NP	2.0-6.0	0.08-0.10	7.9-8.4	< 2	Low	Moderate	High
			34-60	Very gravelly and cobbly sandy loam.	GM	A-1	10-25	40-50	40-45	25-35	10-20	15-25	NP	2.0-6.0	0.05-0.06	7.9-8.4	2-4	Low	Low	High

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Duckwater Planning Unit Nevada

Table 4 - Estimated engineering properties of soils

(Absence of data indicates that the soil is too variable or that no estimate was made. The symbol > means greater than; and the symbol < mean less than).

Soil series and map symbol (1)	Depth to --- Hardpan or bedrock (Ft.) (2)	Depth to --- Seasonal high water table (Ft.) (3)	13/ Depth from surface (Ins.) (4)	Classification USDA texture (5)	Classification UNIFIED (6)	Classification AASHO (7)	Coarse fraction greater than 3 inches (Pct.) (8)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.) (9)	No. 10 (2.0 mm.) (10)	No. 40 (0.42 mm.) (11)	No. 200 (0.074 mm.) (12)	Liquid limit (13)	Plasticity index (14)	Permeability (Ins./Hr.) (15)	Available water capacity (Ins./In.) (16)	Reaction (pH) (17)	Salinity (ECx10³ @ 25° C.) (18)	Shrink-swell potential (19)	Frost action potential (20)	Corrosivity (Untreated steel) (21)
Haploxerollic Durargids, fine, montmorillonitic frigid: 50.	1.8-3.3 3/	1/	0-16	Clay	CH	A-7	0-2	95-100	95-100	85-90	70-75	55-65	30-40	0.06-0.2	0.15-0.17	6.6-7.3	< 2	High	Moderate	High
			16-39	Clay loam.	CL	A-6	0-2	95-100	95-100	85-90	65-75	30-40	20-30	0.06-0.2	0.17-0.18	7.9-8.4	< 2	High	High	High
			39-50	Strongly cemented lime-silica hardpan.																
Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow: 51.	0.8-1.0 4/	1/	0-11	Gravelly clay loam.	CL	A-6	5-10	80-90	75-85	65-75	55-65	30-40	20-30	0.2-0.6	0.12-0.13	7.9-8.4	< 2	Moderate	High	High
			11-36	Strongly cemented lime-silica hardpan.																
For loamy-skeletal Haploxerollic Durargids part of 51, see respective soil family.			36-60	Weakly cemented very gravelly sandy loam.	GP-GM	A-1	10-20	25-35	20-25	10-20	5-10	15-25	NP	2.0-6.0	0.05-0.07	8.5-9.0	4-8	Low	Low	High
Haploxerollic Durargids, loamy-skeletal, mixed, mesic: 52.	1.6-3.3 4/	1/	0-8	Gravelly sandy clay loam.	SC	A-2	5-10	70-80	70-75	55-65	25-35	20-30	15-25	0.2-0.6	0.11-0.12	7.9-8.4	< 2	Moderate	High	High
			8-26	Gravelly sandy loam.	GM or SM	A-1	0-5	40-50	40-45	25-35	10-20	15-25	NP	0.6-2.0	0.06-0.07	8.5-9.0	2-4	Low	Low	High
For clayey Haploxerollic Durargids and Abgese part of 52, see respective soil families and soil series.			26-42	Strongly cemented lime-silica hardpan.																
			42-60	Very gravelly loamy sand.	GP-GM	A-1	5-10	30-40	25-35	15-25	5-10	10-20	NP	2.0-6.0	0.05-0.06	8.5-9.0	4-8	Low	Low	High
Haploxerollic Durorthids, loamy-skeletal, mixed, frigid: 53, 54.	1.6-2.6 3/	1/	0-14	Gravelly loam.	SM or ML	A-4	0-2	70-80	70-75	60-70	40-55	25-35	NP-5	0.6-2.0	0.12-0.13	7.9-8.5	< 2	Low	High	High
			14-24	Very gravelly sandy loam.	GM	A-1	0-2	30-40	25-35	15-25	10-15	15-25	NP	2.0-6.0	0.05-0.06	8.5-9.0	< 2	Low	Low	High
For Abruptic Xerollic Durargids part of 54, see respective soil family.			24-40	Strongly cemented lime-silica hardpan.																

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Duckwater Planning Unit Nevada

Table 4 - Estimated engineering properties of soils
(Absence of data indicates that the soil is too variable or that no estimate was made.
The symbol > means greater than; the symbol < means less than).

Soil series and map symbol	Depth to --- Hardpan or bedrock	Depth to --- Seasonal high water table	13/ Depth from surface	Classification USDA texture	Classification UNIFIED	Classification AASHO	Coarse fraction greater than 3 inches	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Salinity	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(Ft.) (2)	(Ft.) (3)	(Ins.) (4)	(5)	(6)	(7)	(Pct.) (8)	(9)	(10)	(11)	(12)	(13)	(14)	(Ins./Hr.) (15)	(Ins./In.) (16)	(pH) (17)	(ECx10³ @ 25° C.) (18)	(19)	(20)	(21)
Hopeka: 55. For Rock outcrop part of 55, see Rock outcrop.	0.5-0.8	1/	0-9	Very gravelly loam.	GM	A-1	10-20	20-30	20-25	15-20	10-15	20-30	NP-5	0.6-2.0	0.05-0.06	7.9-8.4	< 2	Low	Low	Moderate
			9-40	Fractured hard limestone bedrock.																
Ilton: 56, 57.	1.7-2.5 8/	1/	0-4	Gravelly loam.	SM	A-4	5-10	70-80	60-70	55-65	35-45	25-35	NP	0.6-2.0	0.10-0.11	7.9-8.5	< 2	Low	High	High
			4-10	Gravelly sandy clay loam.	SC, SM or SC-SM	A-2	10-20	70-80	60-70	50-60	25-35	25-35	5-10	0.2-0.6	0.12-0.13	7.9-8.5	< 2	Moderate	Moderate	High
			10-24	Gravelly sandy loam.	SM	A-1	5-10	60-70	50-60	30-40	15-25	15-25	NP-5	0.6-2.0	0.07-0.08	7.9-8.5	< 2	Low	Low	High
			24-60	Soft platy tuffaceous sandstone.																
Lien: 58	0.5-1.5 3/	1/	0-13	Very gravelly loam.	GC or GM-GC	A-1 or A-2	0-3	30-40	20-30	15-25	10-20	20-30	5-10	2.0-6.0	0.05-0.06	8.5-9.0	< 2	Low	Low	High
			13	Indurated lime-silica cemented hardpan.																
Loza: 59. For Drewing part of 59, see Drewing series.	1.0-1.5 3/	1/	0-9	Gravelly loam.	GC-GM or SC-SM	A-2 or A-4	0-5	60-70	50-60	45-55	30-40	20-30	5-10	0.6-2.0	0.10-0.11	7.9-8.5	< 2	Low	High	High
			9-17	Gravelly clay loam.	GC	A-2	0-5	50-60	40-50	35-45	25-35	25-35	20-30	0.6-2.0	0.12-0.13	7.9-8.5	< 2	Moderate	Moderate	High
			17-32	Strongly cemented lime-silica hardpan.																
			32-60	Weakly cemented tuff gravel.	GP	A-1	0-5	10-20	5-10	2-5	1-3	NP	NP	6.0-20	0.04-0.05	7.9-8.5	< 2	Low	Low	High
Nark: 60, 61.	2.0-3.2 3/	1/	0-14	Gravelly loam and light gravelly clay loam.	SC-SM	A-4	0-1	70-80	65-75	55-65	40-50	20-30	5-10	0.2-0.6	0.12-0.13	7.9-9.0	< 2	Moderate	High	High
			14-35	Weakly cemented loam and sandy loam.	SM	A-2	0-1	90-100	90-100	55-65	25-35	15-25	NP-5	0.2-0.6	0.11-0.13	8.5-9.0	4-8	Low	Moderate	High
			35-60	Indurated lime-silica cemented hardpan.																

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Duckwater Planning Unit, Nevada

Table 4 - Estimated engineering properties of soils
(Absence of data indicates that the soil is too variable or that no estimate was made.
The symbol > means greater than; the symbol < means less than).

Soil series and map symbol	Depth to --- Hardpan or bedrock (Ft.)	Depth to --- Seasonal high water table (Ft.)	13/ Depth from surface (Ins.)	Classification USDA texture	Classification UNIFIED	Classification AASHO	Coarse fraction greater than 3 inches (Pct.)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability (Ins./Hr.)	Available water capacity (Ins./In.)	Reaction (pH)	Salinity (ECx10³ @ 25° C.)	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Nuc: 62, 63, 64, 65. For Xeric Torriorthents, Ramshorn and Rock outcrop part of 64 and Xerollic Haplargids part of 65, see respective soil series, soil families and Rock outcrop.	1.6-3.3 4/	1/	0-12	Gravelly loam.	SM-SC or SC	A-2	2-10	70-80	65-75	55-65	40-50	25-35	5-10	0.6-2.0	0.08-0.10	7.9-8.5	< 2	Low	High	High
			12-36	Very gravelly clay loam. 9/	GC	A-2	2-10	30-40	25-35	20-30	15-25	25-35	10-20	0.06-0.2	0.07-0.08	8.5-9.0	< 2	Low	Low	High
			36-60	Weakly cemented very gravelly loam.	GP-GM	A-2	2-10	10-20	10-20	10-15	5-10	20-30	5-10	0.06-0.2	0.06-0.07	8.5-9.0	2-4	Low	Low	High
Papoose: 66.	> 5	1/	0-11	Gravelly sandy clay loam.	SC	A-2	0-5	75-85	70-75	55-65	25-35	20-30	10-20	0.2-0.6	0.10-0.12	7.9-8.4	< 2	Moderate	Moderate	High
			11-38	Gravelly sandy loam.	SM	A-1	0-5	65-75	60-65	35-45	20-25	15-25	NP	2.0-6.0	0.07-0.08	7.9-8.4	4-8	Low	Low	High
			38-60	Very gravelly loamy sand.	GP-GM	A-1	5-10	30-40	25-35	15-25	5-10	10-20	NP	6.0-20	0.05-0.07	7.9-8.4	4-8	Low	Low	High
Pedoli	> 5	1/	0-27	Gravelly sandy clay loam and gravelly sandy loam.	SC	A-2 or A-6	0-5	70-80	65-75	55-65	30-40	25-35	10-15	0.2-0.6	0.12-0.14	7.9-8.4	< 2	Moderate	High	High
			27-60	Gravelly sandy loam.	SM	A-1 or A-2	0-5	75-85	70-75	45-50	25-30	15-25	NP	2.0-6.0	0.07-0.09	7.9-8.4	< 2	Low	Low	High
Penoyer: 67.	> 5	1/	0-22	Silt loam.	ML	A-4	0	100	100	90-100	70-90	30-45	5-10	0.6-2.0	0.17-0.18	7.9-8.4	< 2	Low	High	High
			22-48	Very fine sandy loam.	ML	A-4	0	100	100	85-95	55-65	25-35	NP	0.6-2.0	0.15-0.17	7.9-8.4	4-8	Low	High	High
			48-60	Sandy loam.	SM	A-2 or A-4	0	95-100	95-100	60-70	30-40	20-30	NP	2.0-6.0	0.11-0.13	7.9-8.4	4-8	Low	High	High
Poorma: 68.	> 5	1/	0-8	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	55-65	25-35	NP	0.6-2.0	0.15-0.17	8.5-9.0	< 2	Low	High	High
			8-56	Silt loam.	ML	A-4	0	100	100	90-100	70-90	30-40	5-10	0.6-2.0	0.17-0.18	8.5-9.0	2-4	Low	High	High
Portmount: 69.	> 5	1/	0-12	Heavy sandy loam or gravelly sandy loam.	SC or SM-SC	A-2	0-2	75-85	75-80	45-55	20-30	20-30	5-10	0.6-2.0	0.11-0.13	7.9-8.4	< 2	Moderate	High	High
			12-60	Gravelly sandy loam.	SM or SM-SC	A-1 or A-2	0-5	65-75	65-70	40-50	20-30	15-25	NP-5	2.0-6.0	0.08-0.10	7.9-8.4	< 2	Low	High	High

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Duckwater Planning Unit Nevada

Table 4 - Estimated engineering properties of soils

(Absence of data indicates that the soil is too variable or that no estimate was made. The symbol > means greater than; the symbol < means less than).

Soil series and map symbol	Depth to --- Hardpan or bedrock (Ft.)	Depth to --- Seasonal high water table (Ft.)	13/ Depth from surface (Ins.)	Classification USDA texture	Classification UNIFIED	Classification AASHO	Coarse fraction greater than 3 inches (Pct.)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability (Ins./Hr.)	Available water capacity (Ins./In.)	Reaction (pH)	Salinity (ECx10^3 @ 25° C.)	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Ramshorn	> 5	1/	0-11	Gravelly loam.	SM-SC or SC	A-4	5-15	60-70	60-65	50-60	35-45	25-35	5-10	0.6-2.0	0.10-0.11	7.9-8.4	< 2	Low	High	High
			11-65	Very gravelly loam.	GM-GC or GC	A-2	5-10	25-35	25-30	20-30	15-20	25-35	5-10	6.0-20	0.05-0.06	7.9-8.4	2-4	Low	Low	High
Rock outcrop 10/																				
Typic Camborthids, loamy-skeletal, mixed, mesic: 70. For Rock outcrop part of 70, see Rock outcrop.	> 5	1/	0-40	Gravelly and cobbly fine sandy loam.	SM-SC, SC or SM	A-2	25-45	75-85	65-75	45-55	30-40	20-30	5-10	2.0-6.0	0.06-0.08	7.9-8.4	< 2	Low	Low	High
Typic Camborthids, coarse-loamy, mixed, mesic.	> 5	1/	0-7	Gravelly loam.	SM-SC, SC or SM	A-4	0	70-80	65-75	55-65	40-50	25-35	5-10	0.6-2.0	0.10-0.12	7.9-8.4	< 2	Low	High	High
			7-17	Gravelly sandy loam.	SM	A-1 or A-2	0	65-75	60-70	35-45	20-30	20-30	NP	2.0-6.0	0.08-0.10	7.9-8.4	< 2	Low	High	High
			17-40	Shaly sandy loam.	SC	A-2	0	70-80	70-80	40-50	20-30	20-30	10-15	0.6-2.0	0.10-0.12	8.5-9.0	2-4	Low	High	High
			40-48	Sandy clay loam.	SC or CL	A-6	0	100	95-100	75-85	45-55	30-40	20-30	0.2-0.6	0.17-0.18	8.5-9.0	4-8	Moderate	High	High
Typic Haplargids, fine-loamy, mixed, mesic: 71. For Typic Camborthids part of 71, see respective soil family.	> 5	1/	0-21	Sandy loam.	SM or SM-SC	A-2	0	85-90	80-85	50-60	25-35	20-30	NP-5	2.0-6.0	0.11-0.13	7.9-9.0	< 2	Moderate	High	High
			21-29	Very gravelly sandy loam.	SM	A-1	0	30-40	25-35	20-30	10-15	15-25	NP	2.0-6.0	0.07-0.08	8.5-9.0	2-4	Low	Low	High
			29-36	Very gravelly loam.	GM-GC, GM or GC	A-2	0	30-40	25-35	20-30	15-25	25-35	5-10	0.6-2.0	0.07-0.08	8.5-9.0	4-8	Low	Moderate	High
			36-48	Clay loam.	CL	A-6	0	80-90	75-85	65-75	55-65	30-40	15-25	0.2-0.6	0.17-0.18	7.9-8.5	4-8	Moderate	High	High
Typic Torriorthents, coarse-silty, mixed (calcareous), frigid: 72.	> 5	1/	0-60	Silt loam.	ML	A-4	0	100	100	90-100	75-85	30-40	NP-5	0.6-2.0	0.17-0.18	7.9-9.0	4-8 11/	Low	High	High

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Soil series and map symbol	Depth to --- Hardpan or bedrock (Ft.)	Depth to --- Seasonal high water table (Ft.)	13/ Depth from surface (Ins.)	Classification USDA texture	Classification UNIFIED	Classification AASHO	Coarse fraction greater than 3 inches (Pct.)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability (Ins./Hr.)	Available water capacity (Ins./In.)	Reaction (pH)	Salinity (ECx10^3 @ 25° C.)	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Typic Torriorthents, fine-loamy, mixed (calcareous), mesic: 73. For Bylo part of 73, see respective soil series.	> 5	1/	0-30	Silt loam.	CL	A-6	0	95-100	95-100	85-95	75-85	30-40	10-15	0.2-0.6	0.17-0.18	7.9-8.5	2-4	Moderate	High	High
			30-60	Gravelly sandy loam.	SM	A-1	0	60-70	55-65	35-45	15-25	15-25	NP	2.0-6.0	0.08-0.10	7.9-8.5	4-8	Low	Moderate	High
Unsel: 74.	> 5	1/	0-21	Sandy clay loam.	SC	A-2	5-10	70-80	65-75	55-65	25-35	30-40	10-20	0.2-0.6	0.17-0.18	7.9-9.0	2-4	Moderate	High	High
			21-50	Stratified very gravelly loamy sand and gravelly loam.	GP-GM	A-1	5-15	30-40	25-35	15-25	5-10	10-20	NP	0.2-0.6	0.06-0.07	7.9-9.0	2-4	Low	Low	High
Xerertic Camborthids, fine, montmorillonitic, frigid: 75.	1.6-3.3 12/	1/	0-30	Clay.	CH	A-7	5-10	95-100	95-100	85-95	70-80	55-65	35-45	< 0.06	0.13-0.15	7.9-8.5	< 2	High	Moderate	High
			30-60	Shale bedrock.																
Xerertic Haplargids, clayey, montmorillonitic, frigid, shallow: 76, 77. For Drewing and Xerollic Haplargids part of 77, see respective soil series and soil families.	1.1-1.7 12/	1/	0-18	Clay.	CH	A-7	10-20	85-95	80-85	75-80	65-75	50-60	30-40	< 0.06	0.13-0.15	7.9-8.5	< 2	High	Moderate	High
			18-24	Shale bedrock.																
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow: 78. For Xerollic Durargids part of 78, see respective soil family.	0.5-1.3 7/	1/	0-8	Gravelly loam.	GM-GC, GM or GC	A-2	0-10	35-45	30-40	25-35	15-25	25-35	5-10	0.6-2.0	0.06-0.08	7.9-8.4	< 2	Low	Moderate	High
			8-40	Weathered tuff bedrock.																

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Soil series and map symbol	Depth to --- Hardpan or bedrock (Ft.)	Depth to --- Seasonal high water table (Ft.)	Depth from surface 13/ (Ins.)	Classification: USDA texture	Classification: UNIFIED	Classification: AASHO	Coarse fraction greater than 3 inches (Pct.)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability (Ins./Hr.)	Available water capacity (Ins./In.)	Reaction (pH)	Salinity (ECx10³ @ 25° C.)	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Xerollic Calciorthids, loamy-skeletal, mixed, mesic.	> 5	1/	0-11	Gravelly sandy loam.	SM	A-1	5-10	65-75	55-65	35-45	20-25	15-25	NP-5	2.0-6.0	0.08-0.10	7.9-8.4	< 2	Low	Moderate	High
			11-50	Weakly cemented very gravelly sandy loam.	GP-GM	A-1	10-20	20-30	20-25	10-15	5-10	15-25	NP	0.2-0.6	0.05-0.06	7.9-8.4	< 2	Low	Low	High
Xerollic Durargids, fine, montmorillonitic, mesic: 79.	1.6-3.0 3/	1/	0-15	Clay and heavy clay loam.	CL	A-6 or A-7	5-10	85-90	80-85	70-80	65-75	35-45	25-35	0.06-0.2	0.14-0.16	7.9-8.4	< 2	High	Moderate	High
			15-24	Very gravelly loam.	GM	A-1 or A-2	5-10	40-50	35-45	30-40	20-30	20-30	NP	2.0-6.0	0.06-0.07	7.9-8.4	2-4	Low	Moderate	High
			24-36	Indurated lime-silica cemented hardpan.																
Xerollic Durgids, loamy-skeletal, mixed, frigid.	2.0-3.3 8/	1/	0-4	Gravelly loam.	SM-SC, ML-CL, ML or CL	A-6	5-10	70-80	65-75	60-70	45-55	20-30	NP-5	0.6-2.0	0.10-0.12	7.4-8.4	< 2	Low	High	High
			4-18	Gravelly clay loam.	SC	A-2 or A-6	5-10	50-60	45-55	40-50	30-40	30-40	15-25	0.2-0.6	0.13-0.15	7.4-8.4	< 2	Moderate	High	High
			18-38	Very gravelly sandy clay loam.	GC	A-2	5-10	30-40	25-35	20-30	10-20	25-35	10-20	0.2-0.6	0.08-0.10	7.8-9.0	2-4	Low	Low	High
			38-65	Weathered tuff bedrock capped by lime-silica hardpan.																
Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow: 80. For Ramshorn part of 80, see respective soil series.	1.0-1.6 3/	1/	0-4	Loam.	CL-ML or CL	A-6	5-10	80-90	75-85	65-75	50-60	20-30	5-10	0.6-2.0	0.13-0.15	6.6-7.8	< 2	Low	High	High
			4-16	Very gravelly clay loam.	GC	A-2	5-10	35-45	35-40	30-35	25-30	30-40	15-25	0.2-0.6	0.08-0.10	7.9-8.4	< 2	Moderate	Moderate	High
			16-22	Indurated lime-silica cemented hardpan.																
Xerollic Durorthids, loamy-skeletal, mixed, mesic, shallow: 81	0.8-1.5 3/	1/	0-14	Gravelly loam.	GM	A-1	15-30	35-45	25-35	20-30	15-20	20-30	NP-5	0.6-2.0	0.09-0.10	7.9-8.4	< 2	Low	Moderate	High
			14-18	Indurated lime-silica cemented hardpan.																

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Table 4 - Estimated engineering properties of soils
(Absence of data indicates that the soil is too variable or that no estimate was made.
The symbol > means greater than; the symbol < means less than).

Soil series and map symbol	Depth to --- Hardpan or bedrock (Ft.)	Depth to --- Seasonal high water table (Ft.)	Depth from surface 13/ (Ins.)	Classification: USDA texture	Classification: UNIFIED	Classification: AASHO	Coarse fraction greater than 3 inches (Pct.)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability (Ins./Hr.)	Available water capacity (Ins./In.)	Reaction (pH)	Salinity (ECx10^3 @ 25° C.)	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Xerollic Durorthids, coarse-loamy, mixed, frigid, shallow: 83.	1.1-1.6 3/	1/	0-10	Loam.	ML or ML-CL	A-4	0-2	90-100	90-95	75-85	55-65	20-30	NP-5	0.6-2.0	0.14-0.16	7.9-8.4	< 2	Low	High	High
			10-17	Gravelly sandy loam.	SM	A-1	0-2	70-80	70-75	40-50	20-30	15-25	NP	2.0-6.0	0.10-0.11	8.5-9.0	2-4	Low	Moderate	High
For Durixerollic Calciorthids and Haploxerollic Durorthids part of 83, see respective soil families.			17-36	Strongly lime-silica cemented hardpan layers stratified with gravel material.																
Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow: 82.	0.5-1.0 6/	1/	0-8	Very shaly clay.	GC	A-2	0-5	20-30	20-30	20-25	15-20	40-50	35-45	0.06-0.2	0.11-0.13	7.9-8.4	< 2	High	Moderate	High
			8-20	Finely bedded shale bedrock.																
Xerollic Haplargids, fine-loamy, mixed, frigid: 84.	3.3-5.0 6/	1/	0-15	Gravelly sandy clay loam.	SC	A-2	0-3	60-70	55-65	45-55	25-35	30-40	20-30	0.2-0.6	0.14-0.16	7.9-8.4	< 2	Moderate	High	High
			15-48	Gravelly sandy loam.	GM-GC or GC	A-2	0	40-50	30-40	20-25	10-15	15-25	5-10	2.0-6.0	0.08-0.10	7.9-8.4	< 2	Low	Moderate	High
			48-60	Weathered shale bedrock.																
Xerollic Haplargids, fine-loamy, mixed, mesic; 85.	> 5	1/	0-5	Loam.	SM, SC or SM-SC	A-4	0	80-90	75-85	65-75	40-50	20-30	5-10	0.6-2.0	0.12-0.13	7.9-8.4	< 2	Low	High	High
			5-12	Gravelly clay loam.	CL	A-6	0	70-80	65-75	60-70	50-60	25-35	15-25	0.6-2.0	0.13-0.14	7.9-8.4	< 2	Moderate	High	High
			12-60	Gravelly sandy loam.	GM or SM	A-1	0	45-55	40-50	25-35	10-20	15-25	NP-5	0.6-2.0	0.08-0.10	8.5-9.0	4-8	Low	Low	High
Xerollic Paleargids, clayey-skeletal, montmorillonitic, mesic: 86.	> 5	1/	0-4	Very stony gravelly sandy loam.	GM or SM	A-1	30-40	50-60	45-55	25-35	15-20	15-25	NP-5	2.0-6.0	0.06-0.07	7.9-8.4	< 2	Low	Low	High
			4-16	Stony gravelly clay.	GC	A-2	30-40	40-55	35-45	30-40	25-35	25-35	15-25	0.06-0.2	0.07-0.09	7.9-8.4	< 2	High	Moderate	High
			16-60	Stony gravelly loamy sand.	SP-SM	A-1	30-40	45-55	35-45	20-30	5-10	10-20	NP	6.0-20	0.05-0.06	7.9-9.0	2-4	Low	Low	High

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Table 4 - Estimated engineering properties of soils
(Absence of data indicates that the soil is too variable or that no estimate was made.
The symbol > means greater than; the symbol < means less than).

Soil series and map symbol	Depth to --- Hardpan or bedrock (Ft.)	Depth to --- Seasonal high water table (Ft.)	13/ Depth from surface (Ins.)	Classification: USDA texture	Classification: UNIFIED	Classification: AASHO	Coarse fraction greater than 3 inches (Pct.)	Pct. less than 3 ins. passing sieve-- No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability (Ins./Hr.)	Available water capacity (Ins./In.)	Reaction (pH)	Salinity ($EC \times 10^3$ @ 25° C.)	Shrink-swell potential	Frost action potential	Corrosivity (Untreated steel)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Yody: 87, 88. For Abgese part of 87 and Bravane part of 88, see respective soil series.	2.5-3.3 4/	1/	0-16	Gravelly sandy clay loam.	SC	A-2	0-5	75-85	75-80	60-70	25-35	25-35	15-20	0.2-0.6	0.12-0.14	7.9-8.4	< 2	Moderate	High	High
			16-38	Stratified gravelly sandy loam and gravelly loamy sand.	SM or GM	A-1	0-5	50-60	50-55	30-40	10-15	15-20	NP-5	0.6-2.0	0.07-0.09	7.9-8.4	2-4	Low	Moderate	High
			38-60	Stratified lime-silica cemented very gravelly textured hardpan.																

FOOTNOTES:

1/ All of the soils mapped in this soil survey lack a high water table. A few of the soils are subject to flooding for brief periods.
2/ Unit 22 has a sandy loam surface, and Unit 23 a sandy clay loam surface.
3/ Hardpan rippable with heavy equipment.
4/ Hardpan layers rippable with light equipment.
5/ Weakly cemented layers at 12 to 50 inches.
6/ Shale weathering to clay. Easily excavated with light equipment.
7/ Weathered bedrock rippable with heavy equipment.
8/ Soft sandstone easily excavated with light equipment.
9/ Contains a few lenses of weakly cemented material.
10/ No estimate made.
11/ $EC \times 10^3 < 2$ in upper 20 inches and 4 to 8 below 20 inches.
12/ Massive shale bedrock.
13/ Thin layers having little or no significance in estimating engineering properties have been combined. See soil description for detailed horizon separations.

Engineering Interpretations of Soils

The estimated interpretations in table 5 are based on the engineering properties of soils shown in table 4, for soils in this survey area and others nearby or adjoining, and on the experience of engineers and soil scientists with the soils of the Duckwater Planning Unit. In table 5, ratings are used to summarize limitation or suitability of the soils for all listed purposes.

Soil limitations are indicated by the ratings slight, moderate, and severe. Slight means soil properties generally favorable for the rated use, or in other words, limitations that are minor and easily overcome. Moderate means that some soil properties are unfavorable but can be overcome or modified by special planning and design. Severe means soil properties so unfavorable and so difficult to correct or overcome as to require major soil reclamation, special designs, or intensive maintenance. For some uses, the rating of severe is divided to obtain ratings of severe or very severe. Very severe means one or more soil properties so unfavorable for a particular use that overcoming the limitations is most difficult and costly and commonly not practical for the rated use.

Soil suitability is rated by the terms good, fair, and poor, which have, respectively, meanings approximately parallel to the terms slight, moderate, and severe.

Following are explanations of some of the columns in table 5.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into natural soil. The soil material from a depth of 18 inches to 6 feet is evaluated. The soil properties considered are those that affect both absorption of effluent and construction and operation of the system. Properties that affect absorption are permeability, depth to water table or rock, and susceptibility to flooding. Slope is a soil property that affects difficulty of layout and construction and also the risk of soil erosion, lateral seepage, and downslope flow of effluent. Large rocks or boulders increase construction costs.

following are requirements by some of the columns in table 2:

Generic rock description fields are dependent upon type of rock into or horizontal pipe that distributes oil from a septic tank into undisturbed soil. The soil material just below a depth of 18 inches to a test pit is examined. The soil properties considered are those that affect suitability for septic tank absorption fields. Properties that affect absorption are permeability, ease of excavation, and contamination hazard. Depth to bedrock, to seasonal high water table or rock, and susceptibility to flooding. Slope is a soil property that affects the relative difficulty of installing and constructing a system

Local roads and streets, as rated in table 5, have an all-weather surface expected to carry automobile traffic all year. They have a subgrade of underlying soil material; a base consisting of gravel, crushed rock, or soil material stabilized with lime or cement; and a fexible or rigid surface, commonly asphalt or concrete. These roads are graded to shed water and have ordinary provisions for drainage. They are built mainly from soil at hand, and most cuts and fills are less than 6 feet deep.

Soil properties that most affect design and construction of roads and streets are load supporting capacity and stability of subgrade, and the workability and quantity of cut and fill material available. The AASHO and Unified classifications of the soil material, and also the shrink-swell potential, indicate traffic supporting capacity. Wetness and flooding affect stability of the material. Slope, depth to hard rock, content of stones and rocks, and wetness affect ease of excavation and amount of cut and fill needed to reach an even grade.

Shallow excavations are those that require digging or trenching to a depth of less than 6 feet, as for example, excavations for pipelines, sewer lines, phone and power transmission lines, basements, open ditches, and cemeteries. Desirable soil properties are good workability, moderate resistance to sloughing, gentle slopes, absence of rock outcrops or big stones, and freedeom from flooding or a high water table.

Dwellings without basements are not more than three stories high and are supported by foundation footings placed in undisturbed soil. The features that affect the rating of a soil for dwellings are those that relate to capacity to support load and resist settlement under load, and those that relate to ease of excavation. Soil properties that affect capacity to support load are wetness, susceptibility to flooding, density, plasticity, texture, and shrink-swell potential. Those that affect excavation are wetness, slope, depth to bedrock, and content of stones and rocks.

Reservoir areas hold water behind a dam or embankment. Soils suitable for reservoir areas have low seepage, which is related to their permeability and depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material resistant to seepage and piping and of favorable stability, shrink-swell potential, shear strength, and compactibility. Presence of stones or organic material in a soil are among factors that are unfavorable.

Mechanical practices refer to practices such as use of equipment for plowing, chaining, seeding and similar practices.

other permeable material.

Impediments, pipes, and leaves restrict soil aeration to seepage and drying and increase susceptibility, spirit-swell potential, erosion, and compactibility. Presence of stones or organic matter in a soil are among factors that may influence use and management. Soil properties that affect capacity to support load are moisture, aeration, plasticity, density, brittleness, texture, and spirit-swell potential. These last affect expansion and contraction are measures, also, depth to bedrock, and content of stones and rocks.

Vegetative strength holds water against a rain or impediment. Soils with vegetative strength to resist erosion, which is related to depth to limestone or permeable bedrock or other permeable material.

Buildings without basements are not more often spoiled by foundation footings than are supported by structural members, piles, and leaves resting soil material resistance to seepage and drying of impermeable materials, spirit-swell potential, and compactibility. Presence of stones or organic matter in a soil are among factors that may influence use and management.

Mechanical practices refer to practices such as use of equipment for plowing, planting, seeding and similar practices.

Sand and gravel are used in great quantities in many kinds of construction. The ratings provide guidance about where to look for probable sources. A soil rated as a good or fair source of sand or gravel generally has a layer at least 3 feet thick, the top of which is within 6 feet. The ratings do not take into account thickness of overburden, location of the water table, or other factors that affect mining of the materials, and neither do they indicate quality of the deposit.

Road fill is soil material used in embankments for roads. The suitability ratings reflect (1) the predicted performance of soil after it has been placed in an embankment that has been properly compacted and provided with adequate drainage and (2) the relative ease of excavating the material at borrow areas.

Range seeding is the seeding of rangeland to various grasses, forbs, and shrubs. The soils are rated by the "Interim Guide for Rating Soils According to Their Soil Suitability for Rangeland Seeding - Nevada," USDA-SCS and USDI-BLM, August 1971.

Effective rooting depth is the lower depth to which the greatest proportion of plant roots extend. A few plant roots commonly extend to much greater depths than the effective rooting depth.

Soil surface factor is the numerical rating given to determine an erosion condition class. This is done by giving a numerical rating to various visual factors of erosion such as rills and pedestalling.

Erosion hazard refers to the erosion potential of a soil barren of vegetation. The steepness and length of slope, amount of surface gravel or rock, kind and amount of precipitation, and similar factors determine the erosion hazard.

Soil hydrology group is a grouping of soils for runoff potential when thoroughly wetted. Group A soils have high infiltration rates and low runoff potential. Group B soils have moderate infiltration rates and moderately low runoff potential. Group C soils have slow infiltration rates and moderately high runoff potential. Group D soils have very slow infiltration rates and high runoff potential.

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Table 5 - Interpretations of soil properties

Duckwater Planning Unit Nevada

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields (2) 1/	Roads and streets (3) 2/	Shallow excavations (4) 3/	Dwellings without basements (5) 4/	Reservoir areas (6) 3/	Embankments, dikes and levees (7) 3/	Mechanical equipment (8) 5/	Sand (9) 3/	Gravel (10) 3/	Roadfill (11) 3/	Range seedings (12) 6/	Effective rooting depth (ERD) (ins.) (13) 7/	Surface soil factor (SSF) (14) 8/	Erosion hazard (15) 9/	Soil hydrologic group (16) 10/
Abgese: 22, 23, 24, 25, 26. For Portmount part of 24, Durixerollic Calciorthids part of 25 and Haploxerollic Durargids parts of 26, see respective soil series and families.	Slight	Slight	Slight	Slight	Seepage; slope.	Medium shear strength; medium to low compacted permeability.	Favorable	Poor	Poor	Good	Poor: droughty 8-10 inches precipitation. 11/	12-16	30	Moderate	B
Abruptic Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, shallow: 27.	Severe: cemented pan, depth to rock.	Severe: cemented pan, depth to rock, shrink-swell.	Severe: cemented pan, depth to rock.	Severe: cemented pan, depth to rock, shrink-swell.	Depth to rock, slope.	Thin layer, high compressibility.	Large stones slope.	Unsuited	Unsuited	Poor: Large stones, shrink-swell, thin layer.	Very poor: depth to cemented pan, droughty.	8-12	50	Moderate	D
Abruptic Xerollic Durargids, clayey, montmorillonitic, frigid, shallow.	Severe: cemented pan, depth to rock.	Severe: cemented pan, depth to rock, shrink-swell.	Severe: cemented pan, depth to rock.	Severe: cemented pan, depth to rock, shrink-swell.	Depth to rock, slope.	Thin layer, high compressibility.	Favorable.	Unsuited.	Unsuited.	Poor: Shrink-swell, thin layer.	Very poor: depth to cemented pan, droughty.	8-12	45	Moderate	D
Ansping: 28, 29. For Aridic Calcixerolls and Haploxerolls parts of 29, see respective soil families	Severe: perc slowly.	28-Moderate: slope. 29-Slight.	Severe: small stones.	Moderate: shrink-swell	Slope.	Medium shear strength, low to medium compacted permeability.	Favorable.	Unsuited	Poor	Good	Fair: moderately droughty.	10-14	20	Slight to moderate	C
Aridic Calcixerolls, fine-carbonatic, frigid.	Severe: slope.	Severe: slope, shrink-swell.	Severe: slope.	Severe: slope, shrink-swell.	Slope, depth to bedrock.	High compressibility, medium to low shear strength.	Slope	Unsuited	Unsuited	Poor: Shrink-swell.	Poor: slope.	10-14	30	Moderate	C
Aridic Calcixerolls, loamy-skeletal, mixed, frigid, shallow: 30. For Fanu part of 30, see Fanu series.	Severe: depth to rock, slope.	Severe: depth to rock, slope, rock outcrop.	Severe: slopes, depth to rock.	Severe: slope, depth to rock.	Slope, depth to bedrock.	Thin layer	Slope, rock outcrops.	Unsuited	Unsuited	Poor: thin layer.	Very poor: slope, droughty.	12-18	20	Moderate	D

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Table 5 - Interpretations of soil properties

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields (2) 1/	Roads and streets (3) 2/	Shallow excavations (4) 3/	Dwellings without basements (5) 4/	Reservoir areas (6) 3/	Embankments, dikes and levees (7) 3/	Mechanical equipment (8) 5/	Sand (9) 3/	Gravel (10) 3/	Roadfill (11) 3/	Range seedings (12) 6/	Effective rooting depth (ERD) (ins.) (13) 7/	Surface soil factor (SSF) (14) 8/	Erosion hazard (15) 9/	Soil hydrologic group (16) 10/
Aridic Durixerolls, fine-loamy, mixed, frigid: 31.	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Slope, cemented pan.	Medium shear strength and compressibility, medium to low compacted permeability.	Favorable	Unsuited	Unsuited	Poor: thin layer.	Fair: depth to bedrock, moderately droughty.	13-16	35	Moderate	C
Belmill: 32, 33.	Slight	Slight	Severe: small stones, cut banks cave.	Slight	Seepage, slope.	Medium shear strength, medium to high compacted permeability.	Favorable	Poor	Good	Good	Fair: moderately droughty.	15-18	20	Slight to moderate.	B
Bravane	Severe: percs slowly.	Severe: high shrink-swell.	Severe: cemented pan.	Severe: shrink-swell.	Slope, cemented pan.	compressible, shrink-swell.	Favorable	Unsuited	Unsuited	Poor: shrink-swell, thin layer.	Poor: droughty, depth to cemented pan, abrupt textural boundary. 11/	12-14	25	Moderate	D
Bruffy: 34.	Severe: floods.	Severe: low strength.	Severe: floods.	Severe: floods.	Slope	Low strength, compressible, erodes easily.	Favorable	Unsuited	Unsuited	Poor: low strength.	Poor: vesicular layer, about 10 inches of precipitation.	12-15	30	Moderate	C
Buster: 35,36, 37, 38, 39. For Handy part of 37, Pedoli part of 38, and Handy and Xerollic Haplargids parts of 39, see respective soil series and soil families.	Moderate: percs slowly.	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Slope	Favorable	Favorable	Poor	Unsuited	Good	Fair: moderately droughty, 10 to 12 inches precipitation.	10-15	25	Slight to moderate.	D
Bylo: 40, 41, 42, 43, 44. For Abgese part of 43, and Ramshorn part of 44, see respective series.	Severe: floods.	Severe: low strength.	Severe: floods.	Severe: floods.	Slope	Low strength, compressible, erodes easily.	Favorable	Unsuited	Unsuited	Poor: low strength.	Poor: vesicular layer.	10-15	20	Slight to moderate.	C

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Table 5 - Interpretations of soil properties

Duckwater Planning Unit Nevada

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields (2) 1/	Roads and streets (3) 2/	Shallow excavations (4) 3/	Dwellings without basements (5) 4/	Reservoir areas (6) 3/	Embankments, dikes and levees (7) 3/	Mechanical equipment (8) 5/	Sand (9) 3/	Gravel (10) 3/	Roadfill (11) 3/	Range seedings (12) 6/	Effective rooting depth (ERD) (ins.) (13) 7/	Surface soil factor (SSF) (14) 8/	Erosion hazard (15) 9/	Soil hydrologic group (16) 10/
Calciorthidic Haploxerolls, loamy-skeletal, mixed, frigid.	Severe: floods.	Severe: floods.	Severe: floods, cut-banks cave.	Severe: floods.	Seepage, slope.	High seepage	Favorable	Unsuited	Fair	Good	Poor: very gravelly at less than 20 inches.	15-20	25	Slight to moderate.	B
Calciorthidic Haploxerolls, fine, montmoril-lonitic, frigid.	Severe: floods.	Severe: shrink-swell.	Severe: floods.	Severe: floods, shrink-swell.	Slope.	Low strength, compressible, shrink-swell.	Favorable	Unsuited	Unsuited	Poor: low strength, shrink-swell.	Fair: 10 to 12 inches pre-cipitation.	10-15	30	Slight to moderate.	C
Colona: 45.	Severe: perc slowly.	Severe: shrink-swell, compressible.	Severe: too clayey.	Severe: shrink-swell.	Favorable	Compressible, shrink-swell.	Favorable	Unsuited	Unsuited	Poor: shrink-swell, compressible.	Poor: 8 to 10 inches pre-cipitation, ESP 5 to 15 percent.	10-15	45	Moderate	D
Drewing.	Severe: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.	Cemented pan, slope.	Medium shear strength, thin layer.	Favorable.	Unsuited	Unsuited	Poor: thin layer.	Very poor: droughty, cemented pan at < 20 inches. 12/	10-15	20	Moderate	D
Durixerollic Calciorthids, loamy-skeletal, mixed, frigid.	Slight	Slight	Severe: small stones, cutbanks cave.	Slight.	Seepage, slope.	Seepage	Favorable	Unsuited	Fair.	Good	Poor: ESP 5 to 15 percent.	10-15	25	Slight to moderate.	B
Durixerollic Calciorthids, loamy-skeletal, mixed, mesic: 46. For Xerollic Calciorthid part of 46, see respective soil family	Moderate: percs slowly.	Slight	Severe: small stones, cutbanks cave.	Slight	Seepage, slope.	Seepage	Favorable	Unsuited	Fair	Good	Very poor: droughty, very gravelly material at < 20 inches.	10-15	30	Moderate	C
Durorthidic Xeric Torrior-thents, coarse-loamy, mixed (calcareous), frigid: 47. For Ramshorn part of 47, see respective soil series.	Severe: floods.	Severe: low strength.	Severe: floods.	Severe: floods.	Seepage, slope.	Low strength, compressible, piping, erodes easily.	Favorable	Poor	Unsuited	Poor: low strength.	Fair: 8 to 10 inches precipitation with flooding.	15-20	35	Slight to moderate.	B

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Table 5 - Interpretations of soil properties

Duckwater Planning Unit Nevada

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields (2) 1/	Roads and streets (3) 2/	Shallow excavations (4) 3/	Dwellings without basements (5) 4/	Reservoir areas (6) 3/	Embankments, dikes and levees (7) 3/	Mechanical equipment (8) 5/	Sand (9) 3/	Gravel (10) 3/	Roadfill (11) 3/	Range seedings (12) 6/	Effective rooting depth (ERD) (ins.) (13) 7/	Surface soil factor (SSF) (14) 8/	Erosion hazard (15) 9/	Soil hydrologic group (16) 10/
Fanu: 48, 49. For Calciorthidic Haploxerolls part of 49, see respective soil series.	Severe: floods.	Severe: low strength, high potential for frost action.	Severe: floods.	Severe: floods, high potential for frost action.	Slope	Low strength, compressible, piping, erodes easily.	Favorable	Unsuited	Unsuited	Poor: low strength, compressible, high potential for frost action.	Fair: 10 to 12 inches precipitation, high water-holding capacity.	15-20	25	Slight to moderate.	C
Handy.	Slight	Moderate: low strength.	Moderate: large stones.	Slight	Seepage, slope.	Medium shear strenth, piping, compressible.	Few large stones.	Unsuited	Poor	Fair: low strength, compressible.	Poor: 8 to 10 inches precipitation.	10-15	30	Slight to moderate.	D
Haploxerollic Durargids, fine montmorillonitic frigid: 50.	Severe: percs slowly, cemented pan.	Severe: shrink-swell.	Severe: cemented pan.	Moderate: shrink-swell.	Slope	Compressible, shrink-swell.	Favorable	Unsuited	Unsuited	Poor: shrink-swell, compressible, thin layer.	Fair: 10 to 12 inches precipitation, abrupt textural boundary, moderate water-holding capacity.	10-15	30	Slight to moderate.	D
Haploxerollic Durargids, clayey, montmorillonitic, mesic, shallow: 51. For loamy-skeletal Haploxerollic Durargids part of 51, see respective soil family.	Severe: cemented pan.	Moderate: cemented pan, slope.	Severe: cemented pan, slope.	Moderate: cemented pan, slope.	Slope, cemented pan, seepage.	Thin layer	Few large stones.	Unsuited	Fair	Poor: thin layer, ripping of cemented pan required.	Very poor: shallow, water-holding capacity < 2.5 inches.	10-15	30	Slight to moderate.	D
Haploxerollic Durargids, loamy-skeletal, mixed, mesic: 52. For clayey Haploxerollic Durargids and Abgese part of 52, see respective soil families and soil series.	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Slope, cemented pan, seepage.	Thin layer, seepage.	Few large stones.	Unsuited	Fair	Poor: thin layer, ripping of pan required.	Very poor: water-holding capacity < 2.5 inches.	10-15	30	Slight to moderate.	C

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Table 5 - Interpretations of soil properties

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields 1/ (2)	Roads and streets 2/ (3)	Shallow excavations (4) 3/	Dwellings without basements (5) 4/	Reservoir areas 3/ (6)	Embankments, dikes and levees 3/ (7)	Mechanical equipment 5/ (8)	Sand 3/ (9)	Gravel 3/ (10)	Roadfill 3/ (11)	Range seedings 6/ (12)	Effective rooting depth (ERD) (ins.) 7/ (13)	Surface soil factor (SSF) 8/ (14)	Erosion hazard 9/ (15)	Soil hydrologic group 10/ (16)
Haploxerollic Durorthids, loamy-skeletal, mixed, frigid: 53, 54. For Abruptic Xerollic Durargids part of 54, see respective soil family.	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Slope, cemented pan.	Thin layer, seepage.	Favorable	Unsuited	Unsuited	Poor: thin layer.	Poor: gravel at 10 to 20 inches 10 to 12 inches of precipitation.	10-15	45	Moderate	C
Hopeka: 55. For Rock outcrop part of 55, see Rock outcrop.	Severe: depth to rock, slope.	Severe: depth to rock, slope, rock outcrops.	Severe: depth to rock, slope, rock outcrops.	Severe: depth to rock, slope, rock outcrops.	Slope, depth to rock.	Thin layer, large stones.	Large stones, slope, rock outcrops.	Unsuited	Unsuited	Poor: thin layer, large stones, rock outcrops.	Very poor: < 20 inches to bedrock, low water-holding capacity.	5-10	40	Moderate	D
Ilton: 56, 57.	Severe: depth to rock.	56-Moderate: depth to rock, 57-Severe: slope.	Severe: depth to rock, large stones.	56-Moderate: depth to rock, large stones. 57-Severe: slope.	Slope, depth to rock.	Thin layer, large stones.	Large stones, slope.	Unsuited	Unsuited	Poor: thin layer.	Poor: 20 to 40-inch root zone, low water-holding capacity.	8-12	45	Moderate	D
Lien: 58.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Cemented pan, slope.	Thin layer.	Favorable	Unsuited	Unsuited	Poor: thin layer.	Very poor: > 50 percent by volume gravel, low available water-holding capacity.	5-10	25	Slight	D
Loza: 59. For Drewing part of 59, see Drewing series.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Slope, cemented pan.	Thin layer.	Slope	Unsuited	Poor 13/	Poor: thin layer.	Poor: 10 to 20-inch root zone, low water-holding capacity.	10-15	30	Moderate	D
Nark: 60, 61.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Slope, cemented pan.	Medium shear strength and compressibility, thin layer.	Favorable	Unsuited	Unsuited	Poor: thin layer.	Fair: 20 to 40-inch root zone, 3.5 to 5.0 inches available water-holding capacity.	10-15	25	Slight	C

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Table 5 - Interpretations of soil properties

Duckwater Planning Unit Nevada

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields 1/ (2)	Roads and streets 2/ (3)	Shallow excavations 3/ (4)	Dwellings without basements 4/ (5)	Reservoir areas 3/ (6)	Embankments, dikes and levees 3/ (7)	Mechanical equipment 5/ (8)	Sand 3/ (9)	Gravel 3/ (10)	Roadfill 3/ (11)	Range seedings 6/ (12)	Effective rooting depth (ERD) (ins.) 7/ (13)	Surface soil factor (SSF) 8/ (14)	Erosion hazard 9/ (15)	Soil hydrologic group 10/ (16)
Nuc: 62, 63, 64, 65. For Xeric Torriorthents, Ramshorn and Rock outcrop part of 64 and Xerollic Haplargids part of 65, see respective soil series, soil families and Rock outcrop.	Severe: percs slowly.	62-Slight. 64, 65- Moderate: slope. 63-Severe: slope. 14/	62-Slight. 64, 65 - Moderate: slope. 63-Severe: slope. 14/	62-Slight. 64, 65 - Moderate: slope. 63-Severe: slope. 14/	Slope, seepage.	Favorable	Slope, rock outcrop.	Unsuited	Poor	Good	63-Very poor: slope. 62, 64, 65- Very poor: > 50 percent gravel in surface.	5-10	40	Moderate	D
Papoose: 66.	Slight	Slight	Severe: small stones, cutbanks cave.	Slight	Slope, seepage.	Piping	Favorable	Poor	Fair	Good	Very poor: precipitation < 8 inches. 15/	10-15	30	Moderate	C
Pedoli.	Slight	Slight	Slight	Slight	Seepage, slope.	Seepage	Favorable	Poor	Unsuited	Good	Fair: 10 to 12 inches precipitation, 3.5 to 5.0 inches water-holding capacity.	10-15	35	Slight to moderate.	C
Penoyer: 67.	Severe: floods.	Severe: floods, low strength.	Severe: floods.	Severe: floods.	Seepage	Low strength, compressible, erodes easily.	Favorable	Unsuited	Unsuited	Poor: low strength, compressible.	Very poor: vesicular crust, precipitation < 8 inches. 15/	15-20	45	Moderate	C
Poorma: 68.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Seepage, slope.	Low strength. compressible.	Favorable	Unsuited	Unsuited	Poor: low strength, compressible.	Fair: 10 to 12 inches precipitation.	10-15	35	Slight to moderate.	C
Portmount: 69.	Slight.	Slight.	Slight.	Slight.	Seepage	Medium shear strength, medium piping hazard.	Favorable	Poor	Unsuited	Good	Poor: 8 to 10 inches precipitation. 11/	15-20	30	Moderate	B

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Table 5 - Interpretations of soil properties

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields 1/ (2)	Roads and streets 2/ (3)	Shallow excavations 3/ (4)	Dwellings without basements 4/ (5)	Reservoir areas 3/ (6)	Embankments, dikes and levees 3/ (7)	Mechanical equipment 5/ (8)	Sand 3/ (9)	Gravel 3/ (10)	Roadfill 3/ (11)	Range seedings 6/ (12)	Effective rooting depth (ERD) (ins.) 7/ (13)	Surface soil factor (SSF) 8/ (14)	Erosion hazard 9/ (15)	Soil hydrologic group 10/ (16)
Ramshorn	Slight: 0 to 8 percent slopes. Moderate: 8 to 15 percent slopes.	Slight: 0 to 8 percent slopes. Moderate: 8 to 15 percent slopes.	Severe: Small stones, cutbanks cave.	Slight: 0 to 8 percent slopes. Moderate: 8 to 15 percent slopes.	Seepage, slope.	Seepage.	Some large stones.	Unsuited.	Poor.	Good.	Very poor: 10 to 20 inches to gravel and more than 15 percent gravel in surface soil.	10-15	35	Slight to moderate.	B
Rock outcrop 16/															
Typic Camborthids, loamy-skeletal, mixed, mesic: 70. For Rock outcrop part of 70, see Rock outcrop.	Severe: Slope.	Severe: Slope, large stones, rock outcrops.	Severe: Slope, large stones.	Severe: Slope, large stones.	Slope, seepage.	Large stones, seepage.	Slope, large stones, rock outcrops.	Poor.	Unsuited.	Severe: Large stones, slope, rock outcrops.	Very poor: large stones, rock outcrops.	10-15	30	Slight to moderate.	B
Typic Camborthids, coarse-loamy, mixed, mesic.	Moderate: percs slowly.	Slight.	Slight.	Slight.	Seepage, slope.	Seepage.	Favorable.	Unsuited.	Unsuited.	Good.	Poor: droughty.	10-15	30	Slight to moderate.	B
Typic Haplargids, fine-loamy, mixed, mesic: 71. For Typic Camborthids part of 71, see respective soil family	Moderate: percs slowly.	Slight.	Slight.	Slight.	Seepage, slope.	Seepage.	Favorable.	Unsuited.	Unsuited.	Good.	Poor: droughty.	10-15	35	Slight.	B
Typic Torriorthents, coarse-silty, mixed (calcareous), frigid: 72.	Moderate: floods.	Moderate: floods, low strength.	Moderate: floods.	Severe: floods.	Seepage.	Low shear strength, medium compressibility, high piping hazard.	Favorable.	Unsuited.	Unsuited.	Fair: low strength.	Poor: vesicular layer.	15-20	35	Moderate.	C
Typic Torriorthents, fine-loamy, mixed (calcareous), mesic: 73. For Bylo part of 73, see respective soil series.	Severe: floods.	Moderate: floods, low strength.	Severe: floods.	Severe: floods.	Favorable.	Low shear strength, medium compressibility.	Favorable.	Unsuited.	Poor.	Fair: low strength, shrink-swell.	Poor: droughty, vesicular layer.	15-20	60	Moderate.	C

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Table 5 - Interpretations of soil properties

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Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields (2) 1/	Roads and streets (3) 2/	Shallow excavations (4) 3/	Dwellings without basements (5) 4/	Reservoir areas (6) 3/	Embankments, dikes and levees (7) 3/	Mechanical equipment (8) 5/	Sand (9) 3/	Gravel (10) 3/	Roadfill (11) 3/	Range seedings (12) 6/	Effective rooting depth (ERD) (ins.) (13) 7/	Surface soil factor (SSF) (14) 8/	Erosion hazard (15) 9/	Soil hydrologic group (16) 10/
Unsel: 74.	Moderate: Percs slowly.	Moderate: Shrink-swell.	Slight.	Moderate: Shrink-swell	Slope.	Medium to low shear strength, medium compressibility.	Favorable.	Unsuited.	Fair.	Fair: Shrink-swell.	Poor: Droughty.	10-15	30	Slight.	C
Xerertic Camborthids, fine, montmorillonitic, frigid: 75.	Severe: Percs slowly, depth to rock.	Severe: Shrink-swell depth to rock.	Severe: Too clayey, depth to rock.	Severe: Shrink-swell.	Slope.	Compressible, shrink-swell, low strength.	Few large stones.	Unsuited.	Unsuited.	Poor: Shrink-swell.	Fair: Clay texture, moderately droughty.	10-15	20	Moderate.	D
Xerertic Haplargids, clayey, montmorillonitic, frigid, shallow: 76,77. For Drewing and Xerollic Haplargids part of 77, see respective soil series and soil families.	Severe: percs slowly, depth to rock.	Severe: Shrink-swell, depth to rock.	Severe: too clayey, depth to rock.	Severe: Shrink-swell.	Slope, depth to rock.	Compressible, shrink-swell.	Few large stones.	Unsuited.	Unsuited.	Poor: Shrink-swell, thin layer.	Very poor: Shallow to bedrock, droughty, rock outcrop.	10-15	35	Slight to moderate.	D
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow: 78. For Xerollic Durargids part of 78, see respective soil family.	Severe: depth to rock.	Moderate: Rippable rock at < 20 inches.	Moderate: Rippable rock at < 20 inches.	Moderate: Rippable rock at < 20 inches.	Slope, rock.	Thin layer.	Favorable.	Unsuited.	Unsuited.	Poor: Thin layer.	Very poor: Droughty, shallow to bedrock.	8-10	40	Moderate	D
Xerollic Calciorthids, loamy-skeletal, mixed, mesic.	Moderate: Percs slowly.	Slight.	Moderate: Large stones.	Slight.	Seepage, slope.	Seepage, large stones.	Few large stones.	Unsuited.	Fair.	Fair: Large stones.	Poor: Droughty, low available water capacity.	8-12	35	Slight to moderate.	C
Xerollic Durargids, fine, montmorillonitic, mesic: 79.	Severe: Cemented pan.	Severe: Shrink-swell.	Severe: Cemented pan.	Moderate: Cemented pan.	Cemented pan, slope.	Thin layer.	Favorable.	Unsuited.	Unsuited.	Poor: Thin layer.	Poor: Droughty, low available water capacity.	10-15	30	Slight.	C
Xerollic Durargids, loamy-skeletal, mixed frigid.	Severe: Depth to rock.	Moderate: Depth to rock.	Severe: Depth to rock.	Moderate: Depth to rock.	Depth to rock, slope.	Depth to rock.	Favorable.	Unsuited.	Unsuited.	Poor: Thin layer.	Fair: Moderately droughty, 10 to 12-inch precipitation.	12-18	30	Moderate.	C

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Table 5 - Interpretations of soil properties

Duckwater Planning Unit Nevada

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields 1/ (2)	Roads and streets 2/ (3)	Shallow excavations 3/ (4)	Dwellings without basements 4/ (5)	Reservoir areas 3/ (6)	Embankments, dikes and levees 3/ (7)	Mechanical equipment 5/ (8)	Sand 3/ (9)	Gravel 3/ (10)	Roadfill 3/ (11)	Range seedings 6/ (12)	Effective rooting depth (ERD) (ins.) 7/ (13)	Surface soil factor (SSF) 8/ (14)	Erosion hazard 9/ (15)	Soil hydrologic group 10/ (16)
Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow: 80. For Ramshorn part of 80, see respective soil series.	Severe: Cemented pan.	Severe: Cemented pan.	Severe: Cemented pan.	Severe: Cemented pan.	Cemented pan, slope.	Thin layer.	Few large stones.	Unsuited.	Unsuited.	Poor: Thin layer.	Very poor: low available water capacity, shallow to cemented pan.	10-15	20	Slight to moderate.	D
Xerollic Durorthids, loamy-skeletal, mixed, mesic, shallow: 81.	Severe: Cemented pan.	Severe: Cemented pan.	Severe: Cemented pan, large stones.	Severe: Cemented pan, large stones.	Slope, cemented pan.	Thin layer, large stones.	Large stones.	Unsuited.	Unsuited.	Poor: Thin layer.	Very poor: Low available water capacity, shallow to cemented pan.	5-10	35	Slight to moderate.	D
Xerollic Durorthids, coarse-loamy, mixed, frigid, shallow: 83. For Durixerollic Calciorthids and Haploxerollic Durorthids part of 83, see respective soil families.	Severe: Cemented pan.	Severe: Cemented pan.	Severe: Cemented pan.	Severe: Cemented pan.	Slope, cemented pan.	Thin layer.	Favorable.	Unsuited.	Unsuited.	Poor: Thin layer.	Very poor: Shallow to cemented pan.	15-18	20	Slight to moderate.	D
Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, shallow: 82.	Severe: Depth to rock.	Severe: Depth to rock.	Severe: Depth to rock.	Severe: Depth to rock.	Slope, depth to rock.	Thin layer.	Slope.	Unsuited.	Unsuited.	Poor: Thin layer.	Very poor Shallow, droughty.	5-10	50	Slight to moderate.	D
Xerollic Haplargids, fine-loamy, mixed, frigid: 84.	Moderate: Depth to rock.	Moderate: Shrink-swell.	Moderate: Depth to rock.	Slight.	Slope.	Seepage.	Favorable.	Unsuited.	Unsuited.	Fair: Moderate shrink-swell.	Fair: 10 to 12-inch precipitation.	12-16	30	Moderate.	C
Xerollic Haplargids, fine-loamy, mixed, mesic: 85.	Slight.	Slight.	Slight.	Slight.	Seepage, slope.	Seepage.	Favorable.	Poor.	Poor.	Good.	Poor: droughty.	15-20	35	Slight to moderate.	C

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Table 5 - Interpretations of soil properties

Soil series and map symbol (1)	Soil limitations for -----				Features affecting use for -----			Suitability for -----				Other interpretations			
	Septic tank absorption fields (2) 1/	Roads and streets (3) 2/	Shallow excavations (4) 3/	Dwellings without basements (5) 4/	Reservoir areas (6) 3/	Embankments, dikes and levees (7) 3/	Mechanical equipment (8) 5/	Sand (9) 3/	Gravel (10) 3/	Roadfill (11) 3/	Range seedings (12) 6/	Effective rooting depth (ERD) (13) 7/	Surface soil factor (SSF) (14) 8/	Erosion hazard (15) 9/	Soil hydrologic group (16) 10/
Xerollic Pale-argids, clayey-skeletal, mont-morillonitic, mesic: 86.	Severe: large stones.	Severe: Large stones, shrink-swell.	Severe: Large stones.	Severe: Large stones.	Slope, seepage.	Seepage.	Large stones.	Poor.	Poor.	Fair: Large stones.	Very poor: Large stones, droughty.	8-10	30	Slight to moderate.	D
Yody: 87, 88. For Abgeso part of 87 and Bravane part of 88, see respective soil series.	Moderate: Cemented pan.	Slight.	Slight.	Slight.	Slope, seepage.	Seepage.	Favorable.	Unsuited.	Unsuited.	Good.	Poor: Droughty, 8 to 10-inch precipitation. 11/	12-15	35	Slight to moderate.	C

FOOTNOTES:

1/ For assumed minimum depth of tile line at 2 feet. Criteria for rating from "Guide for Interpreting Engineering Uses of Soils," USDA-SCS, November 1971.

2/ Criteria from "Guide for Interpreting Engineering Uses of Soils," USDA-SCS, November 1971. Frost-action susceptibility used in ratings only for soils classified in Great groups of Calcixerolls and Haploxerolls. For additional data for potential frost action see Table 4.

3/ Criteria from "Guide for Interpreting Engineering Uses of Soils," USDA-SCS, November 1971.

4/ For assumed minimum depth of footings at 2 feet. Frost-action susceptibility used in ratings only for soils classified in Great groups of Calcixerolls and Haploxerolls. For additional data for potential frost action see Table 4. Criteria from "Guide for Interpreting Engineering Uses of Soils," USDA-SCS, November 1971.

5/ Features affecting use for mechanical equipment pertains to soil features which affect use of equipment for plowing, chaining, seeding and similar practices.

6/ Criteria from "Interim Guide for Rating Soils According to Their Soil Suitabilities for Rangeland Seedings-Nevada," USDA-SCS and USDI-BLM, August 11, 1971.

7/ Effective Rooting Depth (ERD) pertains to the depth in the soil to which most plant roots extend. It approximates the boundary within the soil profile where the abundance of roots change from "common" to "few."

8/ Surface Soil Factor (SSF) pertains to a numerical rating between zero and one-hundred which has been designed to reflect the present status of erosion in relation to a specified potential. USDI-BLM Form 7310-12, June 1970.

9/ Erosion hazard pertains to a qualitative estimate of the potential for soil particles to be detached and transported by wind, water or other agents when benefits of protective plant cover is not present. Determination of erosion hazard is based on soil texture and other characteristics which affect detachability, infiltration, permeability, slope gradients, length and shape of slope, and content of coarse fragments.

10/ Criteria from USDA-SCS National Engineering Handbook, Section 4, Chapter 7, August 1972.

11/ Gravelly loamy sand, loamy sand, and sand phases have surface horizons 1 to 2 inches thick. Grassland drills can penetrate underlying favorable textured soil material. Wind erosion on these coarse textured phases may be a problem.

12/ Roots penetrate upper 10 to 15 inches of cemented pan. This soil may rate "Poor" in lieu of "Very poor."

13/ Weakly cemented gravel composed of volcanic tuff below 32 inches.

14/ Cemented pan easily ripped with light equipment.

15/ Precipitation for these soils is marginal to 8 inches. Rating is based on < 8 inches.

16/ No interpretations made for rock outcrop, see description.

CLASSIFICATION OF SOILS

Soils are classified so that we can more easily remember their significant characteristics. Classification enables us to assemble knowledge about the soils, to see their relationship to one another and to the whole environment, and to develop principles that help us to understand their behavior and their response to manipulation. First through classification, and then through use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land.

The narrow categories of classification, such as those used in detailed soil surveys, allow us to organize and apply knowledge about soils in managing farms, fields, and woodlands; in developing rural areas; in engineering work; and in many other ways. Soils are placed in broad classes to facilitate study and comparison in large areas such as countries and continents.

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Because this system is under continual study, readers interested in developments of the current system should search the latest literature available.

The current system of classification has six categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. In this system the criteria used as a basis for classification are soil properties that are observable and measurable. The properties are chosen, however, so that the soils

of similar genesis, or mode of origin, are grouped. In table 6, the soils of the Duckwater Planning Unit are placed in seven categories of the current system. Classes of the current system are briefly defined in the following paragraphs.

Order. Ten soil orders are recognized. The properties used to differentiate among soil orders are those that tend to give broad climatic groupings of soils. The two exceptions to this are the Entisols and Histosols, which occur in many different climates. Each order is named with a word of three of four syllables ending in sol (Ent-i-sol).

Suborder. Each order is subdivided into suborders that are based primarily on those soil characteristics that seem to produce classes with the greatest genetic similarity. The suborders narrow the broad climatic range permitted in the orders. The soil properties used to separate suborders are mainly those that reflect either the presence or absence of water-logging, or soil differences resulting from the climate or vegetation. The names of suborders have two syllables. The last syllable indicates the order. An example is Orthent (Orth meaning true or common and ent from Entisol).

Great group. Soil suborders are separated into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and features. The horizons used to make separations are those in which clay, iron, or humus have accumulated; those that have pans that interfere with growth of roots, movement of water, or both; and thick, dark colored surface horizons. The features used are the

self-mulching properties of clay, soil temperature, major differences in chemical composition (mainly calcium, magnesium, sodium, and potassium), dark red and dark brown colors associated with basic rocks, and the like. The names of great groups have three or four syllables and are made by adding a prefix to the name of the suborder. An example is Torriorthents (Torr meaning hot usually dry, orth for true or common and ent from Entisol).

Subgroup. Great groups are subdivided into subgroups, one representing the central (typic) segment of the group, and others called intergrades that have properties of the group and also one or more properties of another great group, suborder, or order. Subgroups may also be made in those instances where soil properties intergrade outside the range of any other great group, suborder, or order. The names of subgroups are derived by placing one or more adjectives before the name of the great group. An example is Typic Torriorthents (a typical Torriorthent).

Family. Soil families are separated within a subgroup primarily on the basis of properties important to the growth of plants or on the behavior of soils when used for engineering. Among properties considered are texture, mineralogy, reactions, soil temperature, permeability, thickness of horizons, and consistence. A family name consists of a series of adjectives following the subgroup name. The adjectives are the class names for texture, mineralogy, and so on, that are used as family differentiae (see table 6). An example is coarse-silty, mixed (calcareous), frigid family of Typic Torriorthents.

Series. The series is a group of soils that have major horizons that except for texture of the surface layer, are similar in important characteristics and in arrangement in the profile. Soil series are named for a geographic location near the place where that series was first observed and mapped. The series are further explained in the section "How this Survey was Made."

Phases. Soils of one series can differ in texture of the surface layer, slope, depth and stoniness or some other characteristic that affects the use and management of the soils by man. On the basis of such differences a soil series is divided into phases.

Table 6.--Classification of the soils mapped in the Duckwater Planning Unit

Order	Suborder	Great group	Subgroup	Family	Series	Phases
Aridisols	Argids	Durargids	Abruptic Xerollic Durargids	clayey-skeletal, montmorillonitic		8 to 15 percent slopes
				clayey, montmorillonitic, frigid shallow		2 to 8 percent slopes
				fine, montmorillonitic, mesic	**Bravane	4 to 8 percent slopes
			Haploxerollic Durargids	loamy-skeletal, mixed, mesic		2 to 8 percent slopes
						4 to 15 percent slopes
				fine-loamy, mixed, mesic	Yody	2 to 8 percent slopes
				fine, montmorillonitic, frigid		2 to 4 percent slopes
				clayey, montmorillonitic, mesic, shallow		2 to 8 percent slopes
						4 to 15 percent slopes
			Xerollic Durargids	loamy-skeletal, mixed, frigid, shallow		0 to 4 percent slopes
				loamy-skeletal, mixed, frigid		4 to 15 percent slopes
				fine, montmorillonitic, mesic		0 to 4 percent slopes
		Haplargids	Duric Haplargids	fine-loamy, mixed, mesic	Unsel	2 to 4 percent slopes
			Durixerollic Haplargids	fine-loamy, mixed, frigid	*Buster	0 to 4 percent slopes
						2 to 8 percent slopes
			Typic Haplargids	fine-loamy, mixed, mesic		2 to 8 percent slopes
				fine-loamy, mixed, mesic	Papoose	2 to 4 percent slopes
			Xerertic Haplargids	clayey, montmorillonitic, frigid, shallow		2 to 8 percent slopes
			Xerollic Haplargids	clayey-skeletal, montmorillonitic, frigid, shallow		4 to 30 percent slopes
						8 to 15 percent slopes
						15 to 30 percent slopes
				fine, montmorillonitic, frigid	**Handy	2 to 8 percent slopes
						4 to 8 percent slopes
				fine-loamy, mixed, frigid		4 to 8 percent slopes
				fine-loamy, mixed, frigid	**Pedoli	2 to 8 percent slopes
				fine-loamy, mixed, mesic		2 to 8 percent slopes
				fine-loamy, mixed, mesic	Abgese	0 to 4 percent slopes
						2 to 4 percent slopes
						2 to 8 percent slopes
				coarse-loamy, mixed, mesic	Portmount	0 to 2 percent slopes
						2 to 4 percent slopes
		Paleargids	Xerollic Paleargids	clayey-skeletal, montmorillonitic, mesic		4 to 8 percent slopes
	Orthids	Calciorthids	Durixerollic Calciorthids	loamy-skeletal, mixed, mesic		2 to 4 percent slopes
						2 to 8 percent slopes
				loamy-skeletal, mixed, frigid		2 to 8 percent slopes
				loamy-skeletal, carbonatic, frigid	Nuc	4 to 8 percent slopes
						4 to 15 percent slopes
				coarse-loamy, mixed, frigid	Ilton	4 to 15 percent slopes
						15 to 50 percent slopes

Table 6.--Classification of the soils mapped in the Duckwater Planning Unit

Order	Suborder	Great group	Subgroup	Family	Series	Phases
				coarse-loamy, mixed, frigid	Poorma	0 to 4 percent slopes
			Xerollic Calciorthids	loamy-skeletal, mixed, mesic		2 to 8 percent slopes
		Camborthids	Typic Camborthids	fine-silty, mixed, frigid	*Bylo	0 to 2 percent slopes
						0 to 4 percent slopes
				coarse-loamy, mixed, mesic		2 to 8 percent slopes
				loamy-skeletal, mixed, mesic		15 to 30 percent slopes
			Vertic Camborthids	fine, montmorillonitic, mesic	Colona	0 to 2 percent slopes
			Xerertic Camborthids	fine, montmorillonitic, frigid		4 to 15 percent slopes
		Durorthids	Haploxerollic Durorthids	loamy-skeletal, mixed, frigid		0 to 4 percent slopes
						4 to 15 percent slopes
			Xerollic Durorthids	loamy-skeletal, mixed, frigid, shallow	Lien	0 to 4 percent slopes
				loamy-skeletal, mixed, mesic, shallow		4 to 15 percent slopes
				coarse-loamy, mixed, frigid, shallow		2 to 8 percent slopes
Entisols	Fluvents	Torrifluvents	Xeric Torrifluvents	fine-loamy, mixed (calcareous), frigid	Bruffy	2 to 4 percent slopes
	Orthents	Torriorthents	Durorthidic Xeric Torriorthents	coarse-loamy, mixed (calcareous), frigid		2 to 4 percent slopes
			Lithic Xeric Torriorthents	loamy-skeletal, carbonatic, frigid	Hopeka	8 to 30 percent slopes
			Typic Torriorthents	coarse-silty, mixed (calcareous), frigid		0 to 2 percent slopes
				coarse-silty, mixed (calcareous), mesic	Penoyer	0 to 2 percent slopes
				fine-loamy, mixed (calcareous), mesic		0 to 2 percent slopes
			Xeric Torriorthents	loamy-skeletal, mixed (calcareous), frigid, shallow		4 to 15 percent slopes
				loamy-skeletal, carbonatic, frigid	*Ramshorn	0 to 4 percent slopes
						4 to 8 percent slopes
						8 to 15 percent slopes
Mollisols	Xerolls	Argixerolls	Aridic Calcic Argixerolls	loamy-skeletal, mixed, frigid	Belmill	0 to 4 percent slopes
						4 to 8 percent slopes
		Calcixerolls	Aridic Calcixerolls	loamy-skeletal, mixed, frigid, shallow		8 to 30 percent slopes
				loamy-skeletal, carbonatic, frigid	Ansping	4 to 8 percent slopes
						4 to 15 percent slopes
				fine, carbonatic, frigid		15 to 30 percent slopes
		Durixerolls	Aridic Durixerolls	fine-loamy, mixed, frigid		0 to 4 percent slopes
				fine-loamy, mixed, frigid	Nark	0 to 4 percent slopes
						4 to 8 percent slopes
				loamy-skeletal, mixed, frigid, shallow	Drewing	2 to 8 percent slopes
			Orthidic Durixerolls	loamy-skeletal, mixed, frigid, shallow	Loza	8 to 30 percent slopes
		Haploxerolls	Calciorthidic Haploxerolls	loamy-skeletal, mixed, frigid		2 to 8 percent slopes
				fine-loamy, mixed frigid	Fanu	2 to 8 percent slopes
				fine, montmorillonitic, frigid		4 to 8 percent slopes

Footnotes:

*Part of series is taxadjunct - classification same as series.
**Taxadjunct to the series - classification same as series.

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GLOSSARY

Alluvium.--Soil material such as sand, silt or clay, that has been deposited on land by streams.

Available water capacity.--The capacity of a soil to hold water in a form available to plants. Amount of moisture held in the soil between field capacity, or about one-third atmosphere of tension, and the wilting coefficient, or about 15 atmospheres of tension.

Clay.--As a soil separate, the mineral soil particles less than 0.002 millimeters in diameter. As a soil texture class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film.--A thin coating of clay on the surface of a soil aggregate. Synonym: Clay coating.

Cobbles.--A rounded or partly rounded fragment of rock, 3 to 10 inches in diameter.

Consistence, soil.--The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.--Noncoherent when dry or moist; does not hold together in a mass.
Friable.--When moist, crushes easily under gentle pressure between thumb and forfinger and can be pressed together into a lump.
Firm.--When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
Plastic.--When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.--When wet, adheres to other material and tends to stretch somewhat and pull apart, rather than to pull free from other material.
Hard.--When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.--When dry, breaks into powder or individual grains under very slight pressure.
Cemented.--Hard and brittle; little affected by moistening.

Erosion.--The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

ALLUVIUM.—Soil material such as sand, silt or clay that has been deposited on land by streams.

ANALYSIS.—The separation of a soil to find what part in a given sample is present by weight. Amount of moisture held in the soil is found by heating a sample to drive off water vapor, and other analyses by chemical methods.

ARID.—When moist, crumbs under moderate pressure pervade slowly; continue pressure for one or more minutes, rupture is gradually accomplished.

BLOCKY.—When wet, readily reduced by moderate pressure into a number of angular fragments which do not break readily into smaller ones; when dry, hard to break; resistant to moderate pressure; can be broken with difficulty between thumb and forefinger.

CAKED.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger; when wet, readily puddled.

CLAY.—A soil separate, the smallest soil particles less than 0.005 millimeters in diameter. As a soil texture class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

CLAY LOAM.—A soil containing 27 to 40 percent clay, 20 to 45 percent sand and not more than 40 percent silt.

COHESION.—Hard and pliable; little affected by moisture.

COMPACTED.—Unnaturally dense or firm layer caused by human activity, such as tillage, or by natural forces, such as freezing and thawing.

CONCRETIONS.—Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of chemical compounds, such as calcium carbonate, iron oxide, or silica.

CONSISTENCE.—The resistance of a soil to rupture or to change its shape. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crumbs easily under gentle pressure between thumb and forefinger and can be broken apart into a loam.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be broken into a lump which will hold any shape.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and break rather than to break away, respond when pressed between thumb and forefinger.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Crushing.—The weighing down of the land surface by mud (sandblast) transported water, and other geological agents.

Flood plain.--Nearly level land consisting of stream sediments that borders a stream and is subject to flooding unless protected artifically.

Hardpan.--A hardened or cemented soil horizon or layer. The soil material may be sandy or clayey, and it may be cemented by iron oxide, silica, calcium carbonate, or other substance.

Horizon, soil.--A layer of soil approximately parallel to the surface that has distinct characteristics produced by soil forming processes. These are the major horizons:

O horizon.--The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.--The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay and sesquioxides (iron and aluminum oxides).

B horizon.--The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon the A horizon alone is the solum.

C horizon.--The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum a Roman numeral precedes the letter C.

R layer.--Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Natural drainage.--Drainage that existed during the development of the soil as opposed to altered drainage which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Flood plain.—Nearly level land consisting of stream sediments that portets a stream and is subject to flooding unless protected artificially.

Friable.—A particular or compacted soil position or layer. The material can be crumbled with the fingers and is not sticky when moist; many soils are friable within a range of moisture content.

Gley.—A layer of soil dominantly greenish in color and wet. Gley soil material is commonly free of iron oxide, alkali, calcium carbonate, or other substances.

Horizon, soil.—A layer of soil approximately parallel to the surface of the land and different from adjacent layers in such properties as color, structure, texture, consistence, and chemical, biological, and physical characteristics.

A horizon.—The uppermost horizon of the soil. The rock fragments are commonly very porous and readily permeable by water and air. A horizon also has a relatively high content of organic matter or maximum biological activity, or both.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying horizon in that it has a different structure, or more clay, or different color, or other characteristics or evidences of chemical action than the A horizon: or (4) by some combination of these. Commonly a buried B horizon may be designated by the letters B, C, and so forth. If a soil has only a slight change of this sort, the B horizon is the one in which the features are most clearly developed.

C horizon.—The relatively little altered material parent to the soil. It may be like the material from which the overlying horizons were formed. If the material is known to be different from that in the soil, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock is generally sufficiently coherent that when moist it cannot be dug with the spade under ordinary moisture conditions. The boundary commonly is gradual.

Intrazonal soil.—Any one of several great groups characterized by more or less well developed features that reflect the influence of a local factor of parent material or relief over the normal influence of climate and living organisms.

Lithosol.—A shallow soil consisting of little more than partly weathered fragments of rock.

Loess.—Fine grained material, dominantly of silt, transported by wind and deposited mainly as sheets that may cover existing topography.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time. They commonly have mottles below 6 to 16 inches in the lower part of the A horizon and in the B and C horizon.

Poorly drained soils are wet for long periods. They are light gray and generally mottled from the surface downward, but some have few or no mottles.

Very poorly drained soils are wet nearly all the time. They have a dark gray or black surface layer and are gray or light gray with or without mottling in the deeper parts of the profile.

Permeability.--The quality that enables a soil horizon to transmit water or air. Terms used to describe permeability are as follows: very slow, slow, moderately slow, moderate, moderately rapid, rapid and very rapid.

Reaction, soil.--The degree of acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid or "sour" soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words the degree of acidity or alkalinity are expressed thus:

	pH		pH
Extremely acid--Below	4.5	Neutral	6.6 - 7.3
Very strongly acid	4.5 - 5.0	Mildly alkaline	7.4 - 7.8
Strongly acid	5.1 - 5.5	Moderately alkaline	7.9 - 8.4
Medium acid	5.6 - 6.0	Strongly alkaline	8.5 - 9.0
Slightly acid	6.1 - 6.5	Very strongly alkaline	9.1 and higher

Relief.--The elevation or inequalities of a land surface considered collectively.

Sand.--As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

	p_H
Lactamelv acid--Below 4.2	Neutral----------6.6 - 7.3
Very strongly acid----4.2 - 5.0	Mildly alkaline----------7.4 - 8.4
Strongly acid----------5.1 - 5.2	Moderately alkaline------8.5 - 9.4
Medium acid----------5.3 - 5.8	Strongly alkaline----------9.5 - 10.0
Slightly acid----------5.9 - 6.2	Very strongly alkaline---10.1 and higher

Acidic.--The designation of intermediates of a land suitable con-
siderably.

Sand.--As a soil separate, finer than very fine sand and coarser than silt; 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz but they may be of any kind of mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Acetate soil.--The designation of a soil horizon containing more than 0.5 me. of acetate ion per 100 grams of soil. Acetate is one of the organic salts formed in the reaction between acetic acid and the bases in the soil. A soil that reacts to pH 4.5 is precisely neutral in reaction because it is neither acid nor alkaline. An acid or "sour" soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words the degree of acidity or alkalinity are expressed in pH values. A soil that reacts to pH 4.5 is

	p_H
Lactamelv acid--Below 4.2	Neutral----------6.6 - 7.3
Very strongly acid----4.2 - 5.0	Mildly alkaline----------7.4 - 8.4
Strongly acid----------5.1 - 5.2	Moderately alkaline------8.5 - 9.4
Medium acid----------5.3 - 5.8	Strongly alkaline----------9.5 - 10.0
Slightly acid----------5.9 - 6.2	Very strongly alkaline---10.1 and higher

Acidic.--The designation of intermediates of a land suitable con-
siderably.

Sand.--As a soil separate, finer than very fine sand and coarser than silt; 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz but they may be of any kind of mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Acetate soil.--The designation of acidity or alkalinity of a soil
expressed in pH values. A soil that reacts to pH 4.5 is precisely neutral in reaction because it is neither acid nor alkaline. An acid or "sour" soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words the degree of acidity or alkalinity are expressed in pH values. A soil that reacts to pH 4.5 is

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well drained soils are nearly free from mottling throughout and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the soils. They have multicolored color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time. They commonly have mottles below 6 to 12 inches in the lower part of the A horizon and in the B and C horizon.

Poorly drained soils are wet for long periods. They are light gray and generally mottled from the surface downward, but some have few or no mottles.

Very poorly drained soils are nearly all the time. They have a dark gray or black surface layer and are very light gray or white in the deeper parts of the profile.

Terminology.--The quality that enables a soil horizon to transmit water or air. Terms used to describe permeability are as follows: very slow, slow, moderately slow, moder-

Silt.--As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002) millimeter to the lower limit of very fine sand (0.05) millimeter. Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Soil.--A natural, three dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effects of climate and living matter acting on earthy parent material as conditioned by relief over periods of time.

Stones.--Rock fragments greater than 10 inches in diameter if rounded and greater than 15 inches along the longer axis if flat.

Structure, soil.--The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary particles. The principal forms of soil structure are: platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are (1) single grain (each grain by itself as in dune sand), or (2) massive (the particles adhering together without any regular cleavage as in many claypans and hardpans).

Subsoil.--Technically the B horizon; roughly, the part of the solum below plow depth.

Substratum.--Technically the part of the soil below the solum.

Texture, soil.--The relative proportion of sand, silt and clay particles in a mass of soil. The basic textural classes in order of increasing proportion of fine particles are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

IDENTIFICATION LEGEND
Duckwater Planning Unit
Parts of Nye and White Pine Counties, Nevada

Map Symbol	Soils
22	Abgese sandy loam, 0 to 4 percent slopes
23	Abgese sandy clay loam, 2 to 4 percent slopes
24	Abgese-Portmount association
25	Abgese-Durixerollic Calciorthids association
26	Abgese-Haploxerollic Durargids association
27	Abruptic Xerollic Durargids
28	Ansping gravelly coarse sandy loam, 4 to 15 percent slopes
29	Ansping-Aridic Calcixerolls association
30	Aridic Calcixerolls-Fanu association
31	Aridic Durixerolls
32	Belmill gravelly sandy loam, 0 to 4 percent slopes
33	Belmill gravelly loam, 4 to 8 percent slopes
34	Bruffy silt loam, 2 to 4 percent slopes
35	Buster gravelly sandy loam, 2 to 8 percent slopes
36	Buster loam, 0 to 4 percent slopes
37	Buster-Handy association
38	Buster-Pedoli association
39	Buster-Xerollic Haplargids association
40	Bylo silt loam, 0 to 2 percent slopes
41	Bylo silt loam, 0 to 4 percent slopes
42	Bylo silty clay loam, 0 to 2 percent slopes
43	Bylo-Abgese association
44	Bylo-Ramshorn association
45	Colona silty clay loam, 0 to 2 percent slopes
46	Durixerollic Calciorthids-Xerollic Calciorthids association
47	Durorthidic Xeric Torriorthents-Ramshorn association
48	Fanu loam, 2 to 8 percent slopes
49	Fanu-Calciorthidic Haploxerolls association
50	Haploxerollic Durargids
51	Haploxerollic Durargids association
52	Haploxerollic Durargids-Abgese association
53	Haploxerollic Durorthids
54	Haploxerollic Durorthids-Abruptic Xerollic Durargids association
55	Hopeka-Rock outcrop complex
56	Ilton gravelly sandy loam, 4 to 15 percent slopes
57	Ilton gravelly sandy loam, 15 to 50 percent slopes
58	Lien very gravelly sandy loam, 0 to 4 percent slopes
59	Loza-Drewing association

IDENTIFICATION LEGEND
Duckwater Planning Unit
Parts of Nye and White Pine Counties, Nevada

Map Symbol	Soils
60	Nark gravelly loam, 0 to 4 percent slopes
61	Nark gravelly loam, 4 to 8 percent slopes
62	Nuc very gravelly loam, 4 to 8 percent slopes
63	Nuc association
64	Nuc-Xeric Torriorthents association
65	Nuc-Xerollic Haplargids association
66	Papoose gravelly sandy loam, 2 to 4 percent slopes
67	Penoyer silty clay loam, 0 to 2 percent slopes
68	Poorma very fine sandy loam, 0 to 4 percent slopes
69	Portmount loamy sand, 0 to 2 percent slopes
70	Typic Camborthids-Rock outcrop association
71	Typic Haplargids-Typic Camborthids association
72	Typic Torriorthents
73	Typic Torriorthents-Bylo association
74	Unsel gravelly sandy loam, 2 to 4 percent slopes
75	Xerertic Camborthids
76	Xerertic Haplargids
77	Xerertic Haplargids-Drewing association
78	Xeric Torriorthents-Xerollic Durargids complex
79	Xerollic Durargids
80	Xerollic Durargids-Ramshorn association
81	Xerollic Durorthids
82	Xerollic Haplargids
83	Xerollic Durorthids-Durixerollic Calciorthids association
84	Xerollic Haplargids
85	Xerollic Haplargids
86	Xerollic Paleargids
87	Yody-Abgese association
88	Yody-Bravane association

52	Xerotic hemorrhagic-thrombocytopenic purpura association
53	Xerotic hepatitis
54	Xerotic hepatosplenomegaly
55	Xerotic hepatosplenomegaly with cholecystitis association
56	Xerotic hepatosplenomegaly with xerotic pneumonia association
57	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis association
58	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis association
59	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis association
60	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis association
61	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis association
62	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis association
63	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis association
64	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis association
65	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis association
66	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis association
67	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis association
68	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis association
69	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis association
70	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis association
71	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis association
72	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis association
73	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis association
74	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis association
75	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis association
76	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis association
77	Xerotic hepatosplenomegaly with xerotic pneumonia and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis association
78	Xero-hepatic splenitis association
79	Xero-hepatic splenitis and xerotic nephritis association
80	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis association
81	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis association
82	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis association
83	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis association
84	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis association
85	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis association
86	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis association
87	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis association
88	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis association
89	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis association
90	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis association
91	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis association
92	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis association
93	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis association
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95	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis association
96	Xero-hepatic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis and xerotic cholecystitis and xerotic gastroenteritis and xerotic hepatitis and xerotic splenitis and xerotic nephritis and xerotic cystitis and xerotic colitis and xerotic gastritis and xerotic enteritis and xerotic appendicitis and xerotic pancreatitis association

STANDARD MAP SYMBOLS

Roads

Poor Motor

Trail

Road Designations

State Highways



Drainage

Intermittent Streams

Spring

Boundaries

Soil Boundary
(takes precedence over
Soil Survey Area Boundary)



Soil Survey Area Boundary

Special Symbols

Rock outcrop

Fence

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